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A GEOGRAPHY OF ASIA

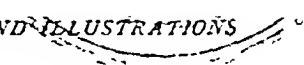
BY

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WITH MAPS AND ILLUSTRATIONS



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PREFACE

IN arranging the lessons in this book the chief aim has been to show under what conditions men live in the various regions, and to bring out as clearly as possible the geographical and political controls. In dealing with the natural features of an area only those aspects are emphasised which have a direct bearing on the lives and activities of the people ; thus the Himalayas are discussed as a barrier, wind-screen, source of silt and glacier-water and so on ; a discussion of their rock structure has been ignored.

The lessons are in three parts :

- (a) Statistical exercises and map reading. Many of the questions can be answered orally before the descriptive reading is attempted ; used in this way the statistics have great educational value, as a large variety of questions may be based upon them.
- (b) A short description of the region.
- (c) Questions requiring a knowledge of the whole lesson.
The exercises in darker type are mapping exercises suitable for homework.

The maps in the book contain only the names that appear in the text : a good atlas, however, should also be used. The build of the continent as a whole is best taught by means of a wall map, and it has not been considered necessary to treat of it in these lessons.

In the compilation of the statistics use has been made of Consular Reports, official publications issued by the Govern-

ments of India and Japan, annual statements issued by the Board of Trade, and other sources of information, such as the *Statesman's Year Book*, the *Japan Book* and the *China Book*. Except where otherwise stated the statistics are averages for a few years immediately preceding the outbreak of war: in most cases they have been adapted so as to render them more suitable for school use.

Thanks are due to various Examining Bodies for permission to use the questions that appear at the end of the book, and also to all those who have kindly allowed their pictures and photographs to be reproduced as illustrations.

The book has been revised by two eminent authorities in India, and the author is extremely grateful to them for many useful suggestions. His thanks are also due to Mr. B. C. Wallis and Miss S. M. Nicholls for valuable suggestions in connection with certain lessons; to Mr. Alford Smith for reading the proofs; and to Sir Richard Gregory and Mr. A. T. Simmons for valuable help in all stages of the work.

J. MARTIN.

COOPERS' COMPANY'S SCHOOL,
LONDON, 1919.

PREFACE TO SECOND EDITION

ECONOMIC conditions in Asia have changed so enormously in the last ten years that it has been found necessary to revise substantially the more important statistics in this book. For the most part they are averages for the last two years; in some cases, however, the 1914 figures have also been included for comparison. It has been found impossible to procure reliable present-day figures for Asiatic Russia, so that the statistics for that section of the book remain unchanged.

An additional section, with map, has been added, dealing with the post-War partition of South-West Asia.

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PART I.

SOUTH-WEST HIGHLANDS.

LESSON I.

ANATOLIA.

TRADE AT ANATOLIAN PORTS.

IMPORTS.

Port.	£100,000.	Chief Articles.
Smyrna -	40	Cottons 11, sugar 3, cloth 2, hides, coffee, machinery, petroleum, timber.
Trebizond -	14	Cottons 4, sugar 1, flour 1.
Samsun -	—	Cottons, utensils, tools, etc.

EXPORTS.

Port.	£100,000.	Chief Articles.
Smyrna -	43	Raisins 11, carpets 7, figs 6, valonia 5, opium 4, cotton 2, tobacco 2.
Trebizond -	7	Filberts 2, tobacco 1, sheep and cattle 1.
Samsun -	1	Tobacco 1.

1. (a) Examine the exports of Smyrna : state what crops you would expect to see in the hinterland ¹ (p. 279) of Smyrna. Where would the carpets be made ?

(b) Examine the imports. Why has timber to be imported ? For what special purpose is the timber employed (see exports) ? Why is so much sugar imported (see exports) ?

(c) Find Samsun and Trebizond (Fig. 3). What exports and imports have they in common ?

¹ See the Glossary, p. 279, for the meaning of this and other unusual terms.

2. Estimate the length of the Baghdad railway (*a*) to Baghdad, (*b*) to Basra.

3. Draw a section through Asia Minor from the Black Sea to the Mediterranean through Angora and Nicosia (Cyprus) (with a horizontal scale 3 times that of Fig. I, vertical scale 1 inch = 6000 ft.).

Build. Anatolia is the western portion of the system of folded plateaux which extends from the Aegean Sea eastward to India. It includes **Asia Minor**, **Armenia** and **Kurdistan**. Persia and the Russian province of **Caucasia** bound it on the east, while towards the south it overlooks Syria and Mesopotamia.

In general build Anatolia is a plateau increasing in altitude from an average of 2000 feet in Asia Minor to about 4000 feet in Armenia and Kurdistan. Several ranges of **fold mountains** traverse it in the direction of its length, of which two, the **Pontic** and **Taurus** ranges, follow closely the north and south shores. Coastal plains along these shores do not exist except where such fast flowing rivers as the Kizil Irmak, Yeshil Irmak, Jihun and Sihun have built small deltas.

Eastward the Taurus range continues as the **Anti-Taurus**, terminating in **Bingiol Dagh**, a high and broad mountain. Other and smaller ranges meet in this mountain. Beyond this central mountain knot, Armenia and Kurdistan consist of lofty valleys enclosed by E.-W. ranges, in one of which stands **Ararat** (17,000 ft.), a smouldering volcanic cone. Three empires meet in this mountain. **Lake Van** (30 m. by 40 m.) stands in the centre of another volcanic region. The valleys of Kurdistan drained by the Murad and its tributaries contain charming scenery. The interior of the western half of Anatolia is lower than its rim, especially in the central lake district north of Konia, where the low fold mountains die away.

The western shore is a series of deltaic plains enclosed by lofty promontories and backed by the abrupt western edge of the plateau. This shore is a **drowned coast**, and the inlets are **rias**. In fact, the shallow Aegean Sea now occupies a sunken

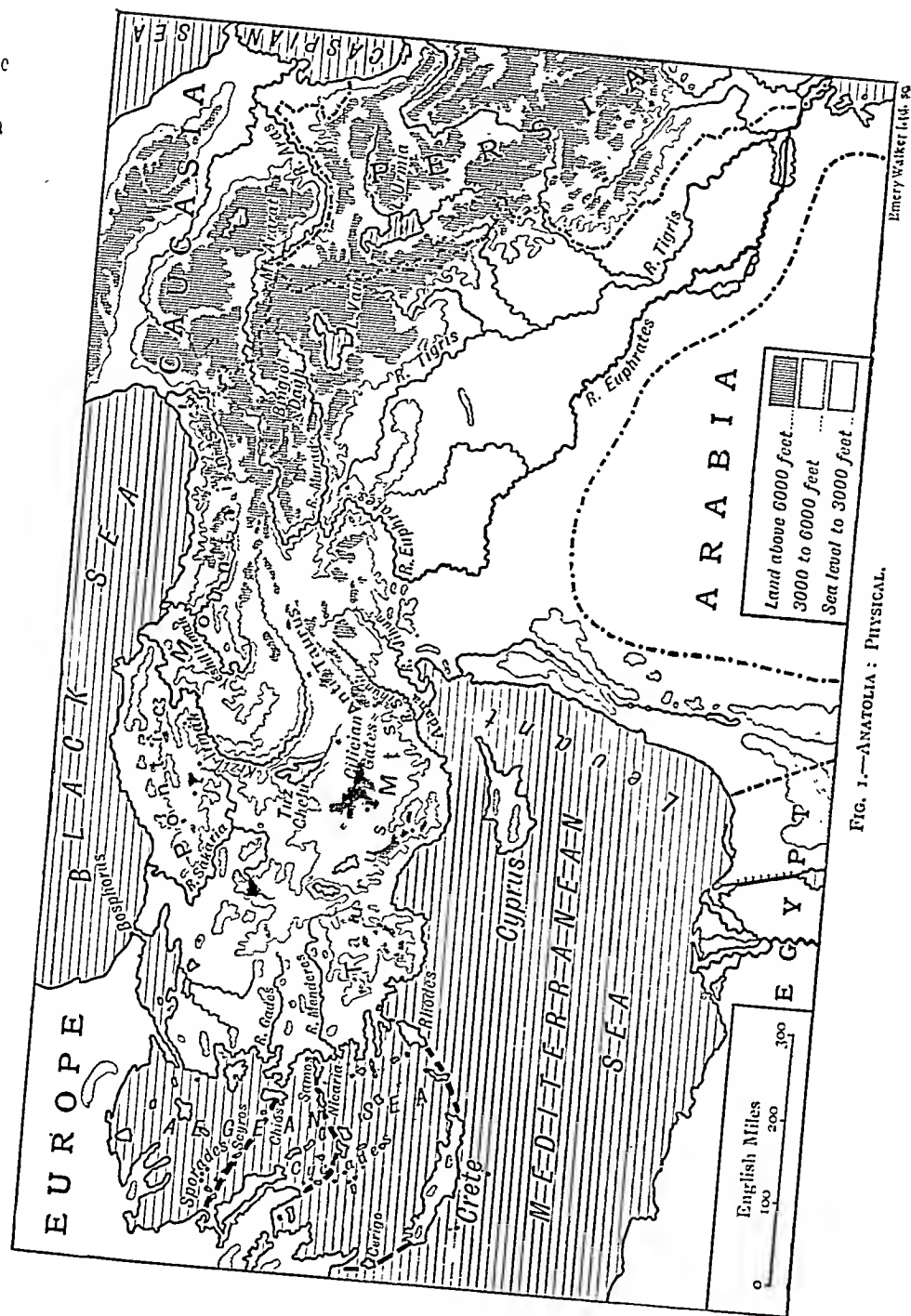


FIG. 1.—ANATOLIA: PHYSICAL.

land surface, along which the Anatolian fold mountains once extended to the Balkans. Three curving strings of lofty islands: Sporades—Seyros—Chios, Cyclades—Nicaria—Samos, Cerigo—Crete—Rhodes, mark the tops of these sunken ranges.

Earthquake shocks are common in the districts of Caria and Lycia in S.W. Asia Minor; great havoc was wrought by an earthquake in the latter region in 1914.

Rivers. Of the three rivers flowing into the Black Sea two, the *Yeshil-Irmak* (Iris) and the *Kizil-Irmak* (Halys), run in impassable ravines. The third, the *Sakaria*, is less torrential, and its valley is followed by a railway from Scutari. Of the rivers running westward the most important are the *Gades* and *Menderes*. The latter, the ancient Meander, is proverbially tortuous, and its name has added a word to our language. Owing to absence of vegetation on the plateau, rain-waters rush at once to the main streams; so great is the quantity of mud brought down under these conditions that the excellent harbour of Smyrna was threatened by the silt from the *Gades* until the mouth of the latter was diverted. The *Jihun* and *Sihun*, emptying into the Levant sea, have a similar life history.

The low-lying centre of Asia Minor is to a great extent an area of inland drainage. It contains many salt lakes—*Tuz Chelu*, etc., which shrink in summer to small proportions.

Climate and vegetation. The prevailing winds on the plateau are from the Black Sea, and thus the Pontic range robs the interior of much moisture. Winter is the wet season, the summer temperature being too high for precipitation; thus the plateau is typical *steppe land*.

Angora goats are reared in great numbers—especially round the town of that name—and rug and carpet weaving is the chief industry, the dye used being made from *madder* and *valonia*. The latter is made from the acorn cups of a certain local kind of oak and is more commonly used in tanning. Barley and other cereals are grown wherever melted snow can be used for irrigation. Further eastward “high Armenia is a wind-swept land of wiry pastures and stunt sparse

growths and scanty crops of coarser cereals thrusting their heads through a cumber of stones."

The coastal fringes have a warmer and more equable climate. The Pontus range is heavily wooded on its seaward slopes, and at the foot are clearings of tobacco and maize. The limestone soil favours the growth of stone fruits, such as



FIG. 2.—KURDS THRESHING.

The oxen are treading out the grain. The Kurds are too ignorant and poor to adopt any other method.

peaches, apricots and plums; while filberts are extensively exported from this coast. The west and south coasts, sheltered by the plateau, have a warmer winter climate and a higher summer temperature. **Sub-tropical crops**, such as the vine, figs, opium, tobacco, cotton and liquorice, are grown in the west; oranges and cotton are grown in the Adana delta, which is sheltered from winter winds.

History. Although the plateau once was, and may again become fertile, the best crops are produced on the coastal

fringes which have been centres of comparatively settled activity ever since the founding there of Greek colonies in the fourth century before Christ. Under the later rule of the Romans agricultural methods were successfully extended to the plateau. Then followed a period of invasion by horde after horde of nomads—Tatars, Turks, Armenians, Kurds—who preyed habitually on the little agricultural settlements that happened to lie in their lawless path. Thus the irrigation works and hard roads which the Romans had built gradually fell into decay, and the country reverted to its natural steppe condition. Only on the coastal fringes, with their rampart of mountains, was continuous agricultural effort possible, and here, and in the adjoining islands, the population persisted largely Greek, developing a sense of law and order which settled ownership always begets.

Nomadism is dying out west of a line through Scutari and Konia, but brigandage persists even to the very outskirts of Smyrna and Brusa.

Armenia and Kurdistan are areas of constant unrest. The nomads of the hills and the settlers of the plains come into conflict whenever the former are driven from the hills by the cold and back again from the plains by the heat.

Communications and towns. Except where railways serve the west, the lines of communication are camel tracks over which heavily armed caravans travel in large bodies. By one route the carpets and rugs of Teheran pass through Tabriz to Erzerum (50)¹, the old capital of Armenia, a town possessing valuable undeveloped deposits of copper, silver, lead, zinc and iron. Trebizond (55), with a bad harbour and difficult approach, is the sea-terminus of the Persian road. The adjoining Pontic foot-hills are even richer in minerals than Erzerum. Samsun (30), in the centre of tobacco fields and connected to Trebizond by a good hard road, is a much better port; and has, in addition, low passes in its rear. From Erzerum the caravan

¹ The number in brackets after the name of each town gives the population in thousands.

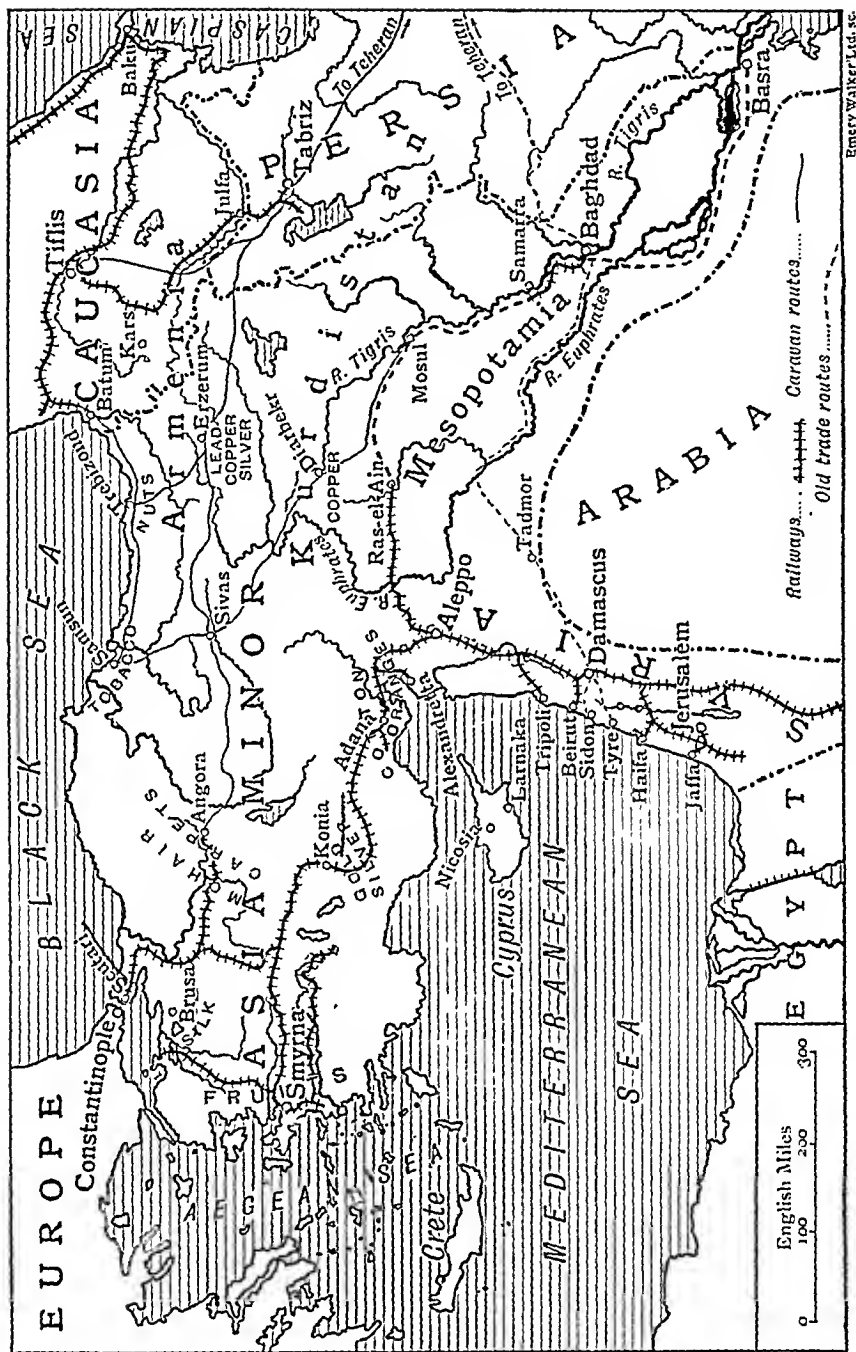


FIG. 3.—ANATOLIA: POLITICAL.

road proceeds westward through Sivas (65), which the crossing of routes has made a bazaar town of importance, and ends at Angora, the new capital of Turkey, in the broad valley of the Porsuk. Standing in the midst of madder fields, Angora is the collecting centre for the silky mohair of a huge pastoral (and once forested) district; its manufactures are rugs and carpets.

The Baghdad Railway, built by German capital, begins at Haidar Pasha opposite Constantinople and will run, when finished, to Baghdad (1510 miles), and thence to Basra and the Persian Gulf. It pierces the Taurus range to the east of the historic Cilician Gates, through which once passed the armies of Cyrus and Alexander the Great. There are eleven miles of tunnels and nine miles of deep cuttings in this section, the gradients on both sides being remarkably steep. At present (1932) there are about 1200 miles open, the terminus being near Ras-el-Ain, halfway between the Euphrates and Tigris.¹ The line possesses great strategic possibilities, especially as it connects at Aleppo with the Pilgrim Railway to Medina. German colonists have settled round many of the stations.

Brusa (110), amid flourishing mulberry groves, has been famous for its silks since ancient times, the finished product finding a ready sale in this hot country, where people appreciate the comfort of silk clothing.

Smyrna (375) is by far the most progressive city in Asia Minor, owing its importance to its splendid harbour facing Greece and the Mediterranean, and to its fertile hinterland. Its chief exports are sultana raisins (religious scruples forbidding the production of wine), carpets, figs, valonia, and cotton. Emery and meerschaum are found in the district, which suffers severely from locusts and malaria. Diarbekr (38) is on the caravan route from Sivas to Mosul; near it are the enormously rich copper mines at Arghana Maden. Gold, silver and lead are mined at Bulghar Maden, near Konia.

¹ In 1932 about 100 miles remained to be completed.

Partition of Turkey. By the terms of the peace treaty after the Great War, the Turkish Empire was partitioned to give effect to the national aspirations of various sections of it, and one or other of the allied nations were allotted the task of superintending and administering the government of these newly created sections.

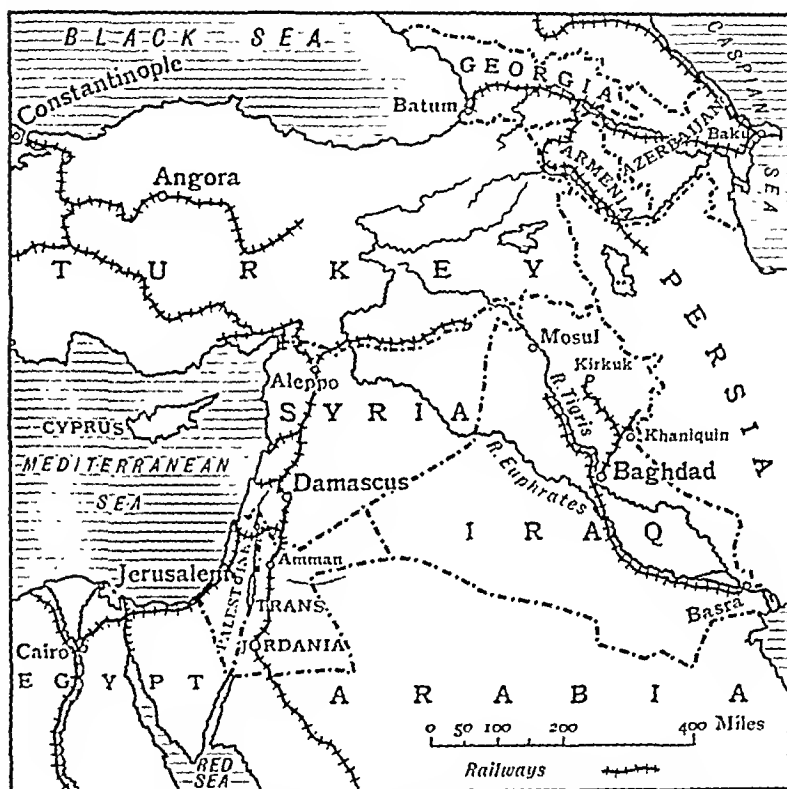


FIG. 3A.—S.W. ASIA.—POST-WAR POLITICAL DIVISIONS. Emery Walker Ltd. sc.

The new divisions are shown in Fig. 3A, and are as follows :
Turkey. This embraces Anatolia and a small strip of Europe encircling Constantinople. The new capital is Angora—centrally situated.

Iraq. This division includes Mesopotamia and a portion of the flanking desert. It is an Arab kingdom under British protection.

Syria. This is the portion of Arab Asia lying north of Palestine : it is under French mandate.

Palestine and Transjordania. This is also under British mandate. It includes the Holy Land and the plateau land east of the Jordan. Of the latter portion the chief town is Amman, an air station on the mail route to India.

Partition of Caucasia. The break-up during the war of the Russian central government was the signal for the Trans-Caucasian peoples to establish three republics—Armenia, Azerbaijan and Georgia—now members of the Union of Soviet Republics.

LESSON II.

SYRIA INCLUDING PALESTINE.

Extent and relief. The boundaries of Syria are partly physical and partly political. The Anti-Taurus range and the Mediterranean delimit the area on the north and west, but the eastern and southern boundaries follow no natural feature. Eastward Syria extends beyond the Euphrates, while on the south the Syrian desert is coextensive with the desert of N. Arabia.

West of the Euphrates, Syria is a limestone plateau increasing gradually in height towards the Mediterranean, along which the plateau assumes the appearance of two ranges trending with the coast. Lebanon (10,000 ft.) and Anti-Lebanon are the highest portions of these ranges ; the enclosed valley, drained by the Orontes and Leontes, can be traced southward in the depression of the Jordan. East of this valley the plateau continues southward without interruption, reaching in Hermon (9000 ft.) and the Hauran an altitude of over 6000 feet. The plain of Esdraelon or Megiddo, running inwards from the Bay of Acre, interrupts the seaward range, which rises again as the low hills of Judaea and Samaria.

Climate and vegetation. The climate of the coastal strip is typically Mediterranean, warm wet winters being followed by hot rainless summers. The rainfall diminishes southward and eastward, being heaviest on Lebanon, which is snow-covered until autumn. The rain falls from November (*former rains*)

to early spring (*latter rains*). The eastern plateau, sloping towards the Euphrates, is a rain shadow, the vegetation changing gradually in that direction from steppe to desert. Along the coast the vegetation is luxuriant wherever the

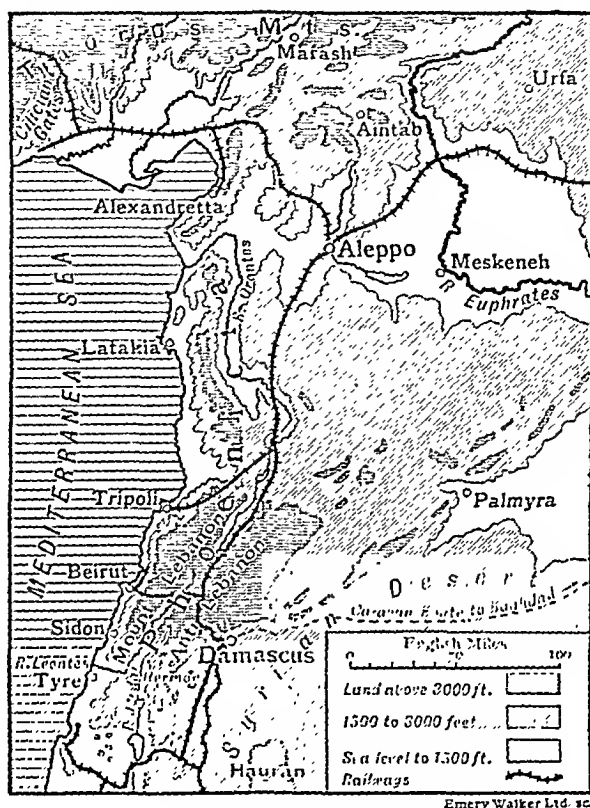


FIG. 4.—NORTHERN SYRIA.

land is irrigated; the products include the orange, mulberry, vine, banana, wheat, barley and maize.

Northern Syria. The Phoenicians. The narrow seaboard, from Alexandretta to Carmel, has always been the most prosperous part of Syria. Known as Phoenicia it was, in the days of the Assyrian and Babylonian empires, the home of a most virile and energetic people who knew how to take full advantage not only of the natural resources of the country,

but also of its position at the seaward end of overland routes from Persia and India. These routes followed the Euphrates to about latitude 35° N., and then struck south-westward along a line of oases past **Palmyra** (now a ruin) to **Damascus**, the oldest and, at that time, the most important city in Asia. Thence routes led south of Hermon to **Tyre**, and north of it to **Sidon**; another route led to **Beirut** through a high pass in the Lebanon range (Fig. 5). Other routes converged on Damascus from Egypt and Anatolia.

The Phoenician cities Tyre, Sidon and Beirut, worked up into saleable articles such raw products as wool, tin and copper obtained from the Mediterranean countries; they also brought cedar wood from Lebanon, and, from a shellfish (murex) found along the coast, they made the famous Tyrian purple dye. These products they took eastward to Damascus and exchanged for Persian, Indian and Egyptian goods, *e.g.* feathers, silks, gold, damasks.

When sea routes (Red Sea) supplanted the old land routes the Mesopotamian cities fell into decay, and the doom of Phoenicia was sealed.

Modern towns and communications. North of a line through Aleppo and Meskenah the country is agricultural as far eastward as the Euphrates. Oranges are grown on the sheltered plain round Alexandretta, and raisins and figs round Aintab and Marash, noted for their light, woven tissues suited to hot climates. The horses of the Urfa district are in great demand in India.

Aleppo (150) stands at the focus of routes; surrounded by cotton fields, and mulberry and olive groves, the town makes cotton and silk tissues and soap. The port is **Alexandretta** (Iskanderun), which resembles the other ports of this rocky coast in having no natural harbour; it is connected by rail with the Baghdad line and by camel track with Aleppo. Harbour works are projected.

Olives, oranges, lemons, raisins and figs are exported in large quantities from **Tripoli** and **Beirut** (150), connected by branch lines to the Pilgrim railway; tobacco of high

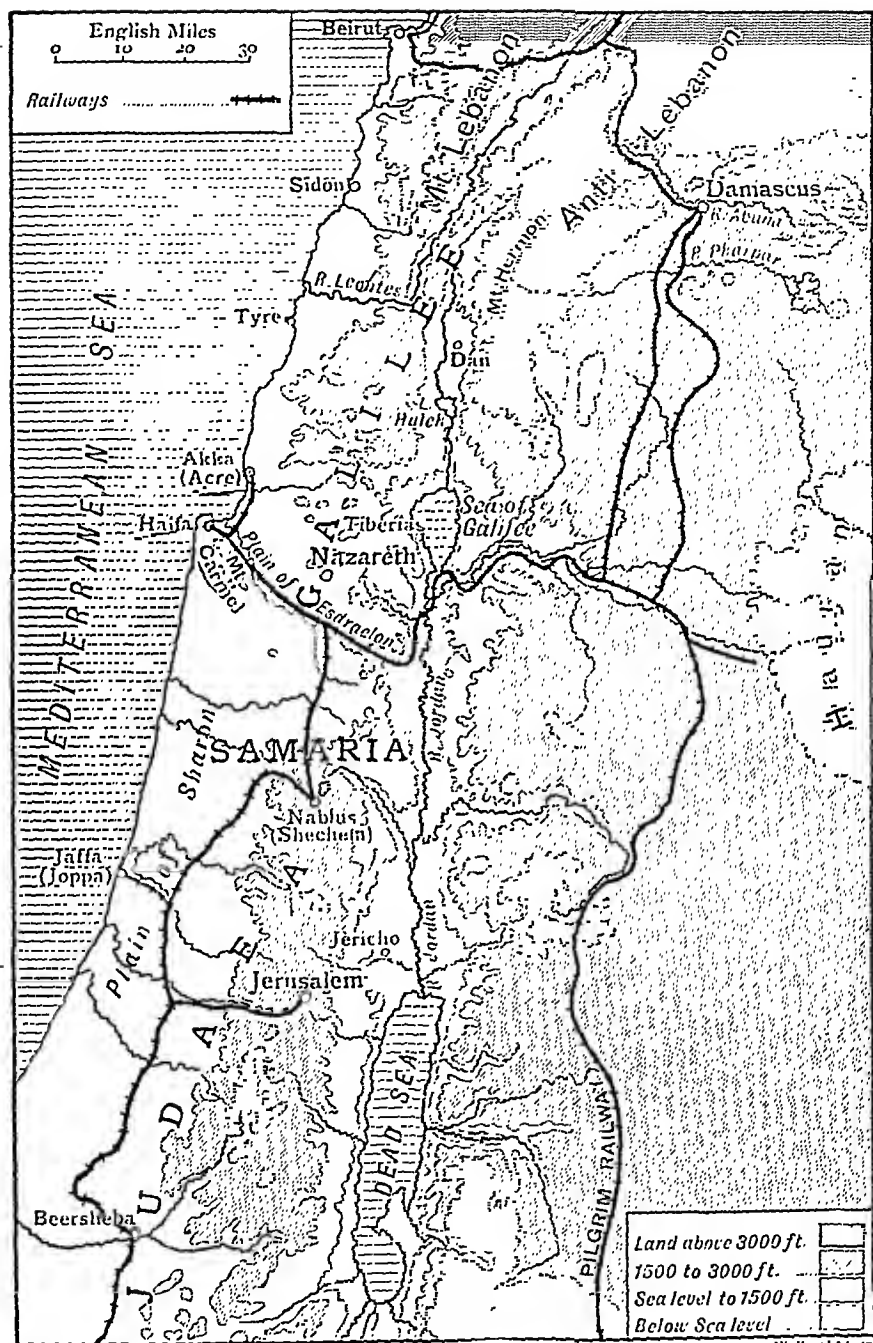


FIG. 5.—PALESTINE. (Note key.)

quality is grown round **Latakia**. Chinese competition has practically put an end to the raw silk industry, and orange groves are supplanting the mulberries, especially between Beirut and Tripoli.

Centuries of misrule have wrought havoc with this maritime area, whose former productiveness is evidenced by abandoned irrigation works and terraces on the sides of Lebanon and the coast range. The cedars of Lebanon are almost entirely cut down, the fruit boxes being made of imported timber.

At the eastern foot of Anti-Lebanon stands **Damascus** (250) on a wonderfully fertile oasis through which now passes the Pilgrim railway. Beyond in the desert are the partially sand-covered ruins of Palmyra (ancient Tadmor)—well preserved in the dry desert air.

Palestine. The connection of Palestine with the events of the Bible, and especially with the life of Christ, makes it the most interesting land on earth; geographically, however, it is to-day of little account. As divided among the twelve tribes its northern limit was the river Leontes, whence it stretched southward "from **Dan** to **Beersheba**." It included a portion of the plateau east of the Jordan.

Galilee. Ancient Galilee extended from the Leontes to the plain of Esdraelon; its narrow coastal plain has already been described. The narrow upper valley of the Jordan, containing the **Waters of Merom** (Lake Huleh) and the **Sea of Galilee**, was a famous battleground; the lower portion was the scene of Christ's early ministry. The plain of Esdraelon affords a passage way from the Bay of Acre to the Jordan valley, and is naturally studded with battlefields; the wheat of the Hauran district passes through it, by rail and camel, to **Haifa**. **Nazareth** lies a few miles north of the plain.

Plain of Sharon. South of Mount Carmel the coastal strip broadens out into the **Plain of Sharon**, the home of the ancient Philistines. The soil is light and the rainfall, though slight (12-14 ins.), is sufficient for the cultivation of fruit trees. There are over 1000 **orange gardens** round **Jaffa**; the oranges are a thick-skinned variety suited for distant transport. **Jaffa**

manufactures soap from olive and sesamum oils, the soda used being obtained from a local saline plant.

Several Jewish Colonies (150,000 people) have recently been established near Jaffa and in the plain of Esdraelon, and promise, by their energy and intelligence, to restore a measure of the ancient prosperity of this district. Tel Aviv, near Jaffa, is a new Jewish city.

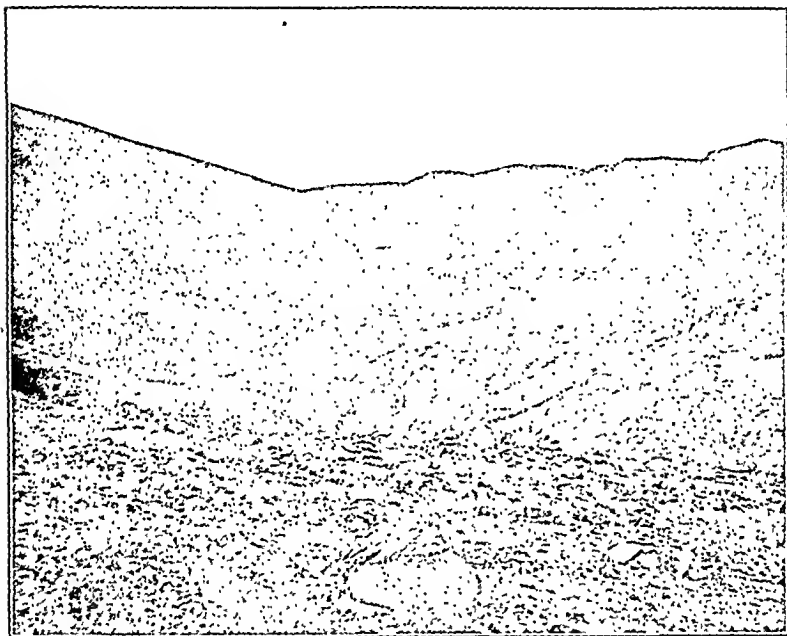


Photo Miss S M Nicholls

FIG. 6.—THE DESERT OF JUDAEA, LYING IN A RAIN SHADOW.
A cart-road follows the dry ravine.

Uplands of Samaria and Judaea. "A land flowing with milk and honey" in ancient times, the uplands of Judaea and Samaria present to-day an appearance of extreme desolation due to the neglect of irrigation terraces. **Mount Carmel**, now a sunburnt upland expanse, was once distinguished for its vineyards and olive groves, and abounds in remains of wine-presses, cisterns and chambers for storing grain. Trees, other than fruit trees, could never have been very abundant, for little timber is found in any of the houses, many of which

date back to the time of the Bible story. In the absence of timber for rafters the houses have domed stone roofs; the shape is not always apparent from the outside, as in many cases the walls have afterwards been carried up to the level of the dome and the roof made flat (Fig. 7).

The land suffers now from excess of heat, lack of moisture and over-drainage. The prevailing rock being limestone—white and porous—deep-seated springs and subterranean streams are common; the towns and villages are built round the former, the latter have formed caves, used freely in former days as granaries, tombs and dwellings.

To the dryness of the climate was due the habit of anointing the head with oil instead of with water; and the ease with which widely-scattered audiences could be addressed may be attributed to the same cause. Except during the rainy season (winter), the country has to rely for moisture on the heavy dews so typical of Mediterranean countries with their large diurnal temperature ranges. Hence sheep are led to the feeding grounds in the early morning.

Wheat, figs and olives are produced wherever there is sufficient depth of soil, but pastoral pursuits prevail. The chief town is Jerusalem (95), surrounded on three sides by deep limestone gorges. Its chief occupations are catering for tourists and pilgrims, and the making of mother-of-pearl articles—*objets de piété*. It is connected by railway with Jaffa.

Valley of the Jordan. The Jordan is a thin trickling stream or a muddy rushing torrent, depending on the season. The deep crack in which it flows is a rift valley which is continued through the Dead Sea, Gulf of Akabah and Red Sea. The Dead Sea waters are lifeless and intensely salt; lumps of sulphur and bitumen are found round the shores.

Lying over 1000 feet beneath sea-level the Jordan valley, known as El Ghor, has a pestilential climate. It is uninhabited except by robbers who lie in wait for pilgrims, and by wild beasts such as the wild boar, jackal and wolf, which wander about in the sub-tropical vegetation on the banks of the stream. There are many cascades in the river,

at some of which are relics of water-driven sugar mills, pointing clearly to a period of ancient prosperity. Jericho, "the city of palms," is represented now by a few huts protected by a hedge of thorny bushes. From the fruit of this bush—a kind of crab-apple—was made the "balm of Gilead."



FIG. 7.—SEA OF GALILEE FROM TIBERIAS.

Note flat and domed roofs. A roof in the foreground is grass-covered for coolness; there are many in this town.

The Hauran. The limestone plateau east of Jordan reaches a height of 6000 feet in Jebel Hauran, where it is overlaid by fertile, black volcanic soil of decomposed basalt. Extensive crops of wheat are raised on the Hauran and shipped from Haifa and Beirut (Fig. 5).

EXERCISES.

1. Explain why there are so many references in the Bible to (a) dews, (b) caves, (c) corner stones (key-stones).
2. Name three imports and three exports of Palestine, commenting on them in each case.

3. Discuss the habits, customs, etc., of the inhabitants of Palestine, so as to point out the influence of climate and surroundings.

4. Write notes on (a) Balm of Gilead, (b) Pilgrim railway, (c) the Hauran plateau, (d) Tyrian purple.

5. Account for the following facts, (a) the streams of Damascus are lucid, (b) the Jordan issues from Mt. Hermon as a full-bodied stream, (c) the ruins of Palmyra are well preserved.

6. State the position, and account for the importance of (a) Damascus, (b) Aleppo, (c) Esdraelon.

7. Draw a sketch map of the Holy Land and insert upon it (a) ports, (b) railways, (c) products.

TRADE AT SYRIAN PORTS INCLUDING PALESTINE.

IMPORTS.

Country.	£100,000.	Chief Articles.
Syria - - -	120	Cottons 20, Motor cars 7, cereals 14, petrol 7.
Palestine (Jaffa, 51%)	70	Petrol 4, cottons 5, silks 2, wheat 2, timber 2.

EXPORTS.

Country.	£100,000.	Chief Articles.
Syria - - -	36	Wool 7, fruits 4, silk 3, livestock 3.
Palestine (Jaffa, 58%)	19	Oranges 9, soap 2, cereals 2.

1. (a) Comment on the import of cottons, silks, timber.

(b) What do the tables tell about the climate of Syria and Palestine?

(c) Comment on the excess of imports over exports.

(d) Which are the Syrian ports?

LESSON III.

ARABIA.

1. Figure 8 shows the apparent annual movement of the sun with reference to the celestial equator. Assuming that his rate of departure from and approach to the equator is constant, estimate :

(a) In how many days (roughly) the sun moves 1° from the celestial equator.

(b) The number of days there is a vertical sun in Arabia.

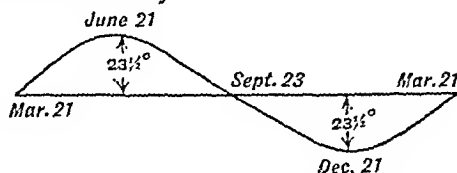


FIG. 8.—APPARENT ANNUAL MOVEMENT OF THE SUN.

2.

TRADE OF ADEN (£100,000).

	By Sea.	By Land.	Treasure.	
Imports -	39	2	4	Cotton twist, piece goods, grain, tobacco, hides, skins.
Exports -	34	2	8	Coffee, gums, hides, skins, piece goods, tobacco.

3.

STATISTICS OF THE SUEZ CANAL.

(a)	Length -	100 miles.
	Depth -	Maximum draught allowed—33 feet.
	Width -	At depth of 33 ft. = 148 ft.
		Maximum (excluding Lakes) = 328 ft.

Sidings are provided at intervals to allow ships to pass.

(b) Trade in 1930 :

Passengers	-	-	-	~	300,000.
Vessels	-	-	-	~	5,761.
Mean duration of passage	-	-	-	~	14.5 hrs.
Total net tonnage	-	-	-	-	32,000,000 tons.
British	-	-	-	-	17,600,000 „
German	-	-	-	-	3,400,000 „
Dutch	-	-	-	-	3,300,000 „
French	-	-	-	-	2,000,000 „

Dues : 6.8 fr. per ton.

Extent and relief. Physically and climatically Arabia is a detached portion of Africa. In build it is a plateau sloping to the Persian Gulf and terminating westward in a series

of rugged coast ranges, which reach in Yemen a height of over 10,000 feet. The coastal fringes were recently under Turkish rule; the interior is ruled over by independent Arab chiefs.

Climate and vegetation.

The southern half of Arabia lies within the Tropics. The summer temperatures are very high on the coastal strips, but are modified sufficiently on the plateau to be endurable even by those accustomed to temperate climates. At that period dry winds blow in steadily from Africa; only Yemen in the extreme south-west gets any rain.

In winter Arabia is a relatively high pressure area, and dry winds blow from the north-east towards Abyssinia. The central plateau—Nejd—is sufficiently high to wrest a little snow from these winds and thus

to save this area from becoming utter desert like those to north and south. Thus Arabia is divided into three vegetation regions, (a) the coastal strips and adjoining mountain slopes, (b) Nejd, (c) deserts.

Red Sea. The Red Sea occupies a deep canal-like rift of

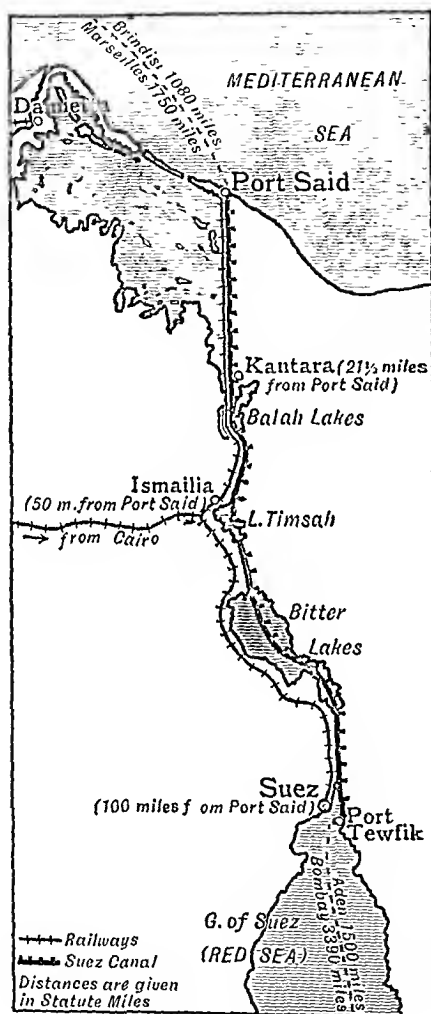


FIG. 9.—SUEZ CANAL (see p. 19).

which the Gulf of Akabah and the Jordan valley are northward extensions. High mountains fringe it from end to end, forming a huge trough up which the torrid winds of the South-west Monsoon are diverted; similarly the North-east Monsoon is diverted and blows southwards, with considerably less vigour, for about four months.

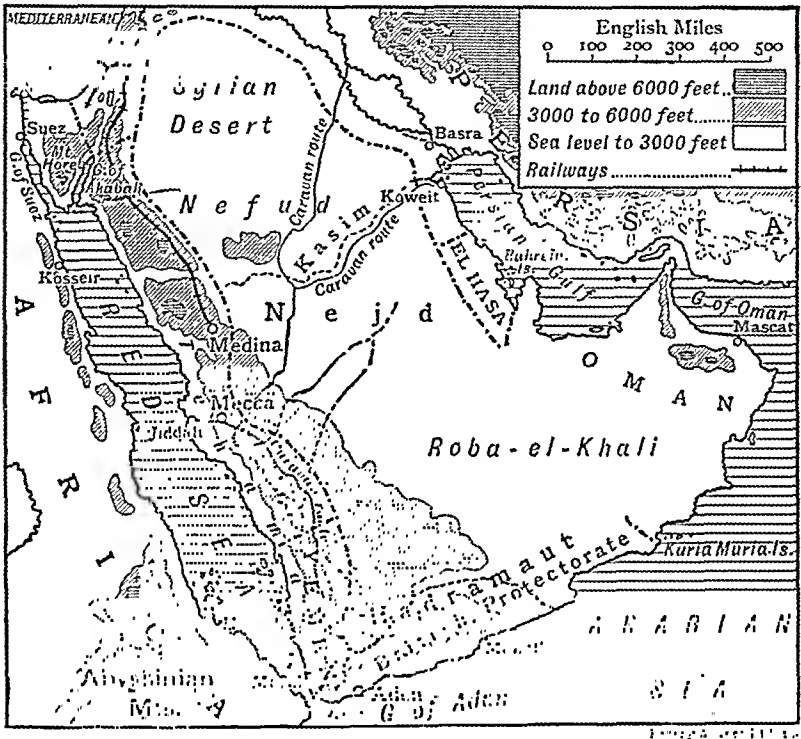


FIG. 10.—ARABIA.

This narrow waterway was for many centuries one of the highways of commerce between Europe and India. During the sway of the Egyptian empire, goods came up the sea to Kosseir and were carried thence overland along an old dry river-bed to Kofe on the Nile, whence they reached the Mediterranean. The Red Sea trade declined after the discovery, in the fifteenth century, of the Cape route, but revived after the opening of the Suez Canal in 1869 (p. 19).

A tropical sun shining through cloudless skies effects rapid evaporation of the waters of this sea which, in the absence of rainfall and inflowing rivers, are more saline than any other ocean water. The warmth and salinity favour the



FIG. 11.—TERRACES ON YEMEN UPLANDS.

Practically the whole mountain is terraced in this way. Note the flat-topped houses in the centre.

growth of coral reefs, which are very abundant along each shore; one very common red variety is said to have given the sea its name.

Red Sea Littoral. The peninsula of Sinai, belonging politically to Egypt, is occupied by the desert of El Tih, and is of interest as the scene of the Israelitish wanderings. In the south is Mount Sinai (8500 ft.), a bare, purple, rocky mass,

reputed to be the Mount of Moses ; Mount Horeb is one of its peaks.

The rest of the western coastal strip belonged recently to Turkey, and displays the usual evidences of their misrule. **Medina**, where Mohammed was buried, and **Mecca**, where he was born, are small towns kept alive by the inflow—steadily diminishing—of pilgrims, for whose wants they cater. **Jiddah** is the port of Mecca. Southward the coast strip—the **Tehama**—is broader and hotter, but, receiving the drainage from the hills of Yemen, supports a considerable population round the coffee ports of **Hodeida** and **Mocha**.

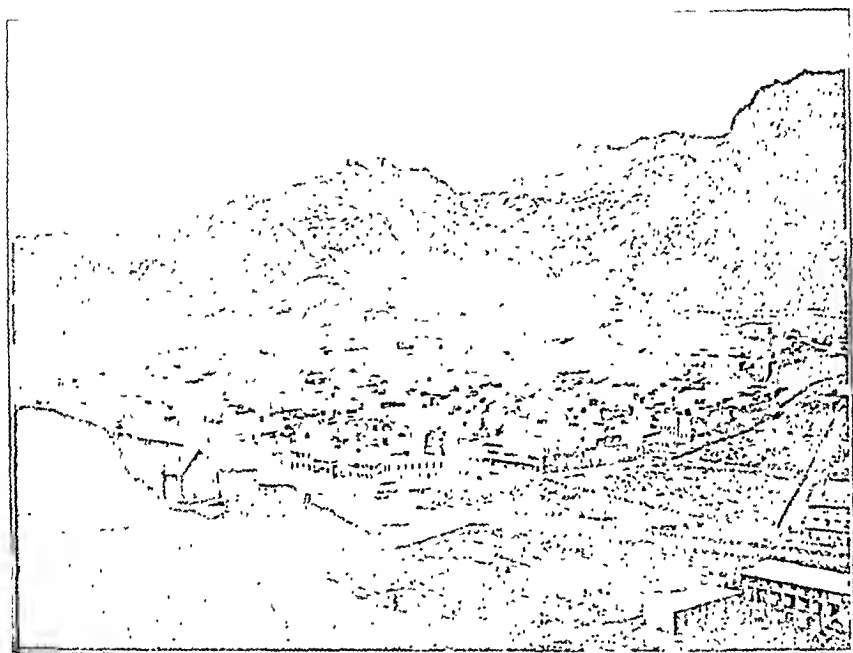
The **Uplands of Yemen**, watered by both monsoons and enjoying a bright temperate climate, are the healthiest and most populous part of Arabia. Extensive terracing almost to the summit enables the Arabs to utilise to the full every drop of rain, and thus the western and eastern sides are a continuous garden. The soil is volcanic, and there are numerous hot springs and sulphur vents much valued by invalids. Peaches, grapes, figs and dates are grown, but the chief crop is coffee, of which three crops are harvested yearly.

The coffee plant needs a warm, moist climate without excessive heat. The last-named requirement is present in western Yemen through the ascent every morning from the lower ground of thick mists, which persist until late afternoon. The great attention paid to coffee culture in this land is partly due to the fact that drinking water, collected and stored for long periods in cisterns, is, as a rule, unfit for use unless boiled, while religious scruples forbid the use of wine. The natives, however, do not use the berry but the pulp in which the seeds are set.

The landward slopes of Yemen, in which is situated **Sana** (7500 ft.), the chief town, are gradually being buried under the encroaching desert sand.

Southern Coast. The first half of this coast, along with its immediate uplands, forms the **British Protectorate of Aden**. On a little peninsula stands the town of **Aden**, its site being

the bare, rocky interior of an extinct volcano (Fig. 12). The climate is intensely hot; big reservoirs have been built to store chance showers, but recourse is had to distillation of sea water, which is here very salt. The port is free and has attracted, through its midway position, a considerable *entrepôt* trade. Both Aden and Perim (British) are coaling stations.



By courtesy of the P & O Navig Co

FIG. 12.—VIEW OF ADEN.

Showing the native city within an old volcanic crater. There is no sign of vegetation. Note the colour and shape of the houses.

Makalla, the port of Hadramaut, exports frankincense and gums. The **Kuria Muria Islands**, five in number, were acquired by Britain as a landing place for the Red Sea telegraph cable.

Eastern Coast. The Arab state of **Oman** exports excellent dates from **Mascat**; dates are produced in **El Hasa** also, and exported from **Koweit**.

The **Bahrein Islands** (British) are the centre of the pearl fishery in the Gulf; considerable *entrepôt* trade is done.

Central Arabia. The Syrian desert is continued into Arabia as a broadening rainless tract called the **Nefud** (Divider)

which passes southward into an upland steppe-like tract (4000 ft.), whose centre is a line from Mecca to Basra. This is Nejd—the home of the Arab, and of the camels, horses and asses for which Arabia is famous. The increased altitude gives this region a heavier rainfall, and the vegetation is more luxuriant than elsewhere on the plateau. The moisture drains below ground to a central valley—Kasim—containing a long line of flourishing oases studded with villages. The crops are dates and corn, on which, with goats' milk, the people live.

Southward of Nejd stretches the huge impassable desert of burning red sand known as Roba-el-Khali or Dahna.

The People. The Arabs are a Semitic race. The plateau dwellers live either by cultivating oases or by keeping flocks. Their animals—the one-humped camel, horse and ass—have always been the best of their kind, for scarcity of food set a stern limit to numbers and put a premium on quality. The dry, clear, exhilarating air of the plateau gave the Arabs keen intelligences, which a pastoral life gave them leisure to employ in meditating upon the meaning of such natural phenomena as the sun, moon and stars, which shine with great brilliance in the clear Arabian skies. It was among the thinkers of Arabia and its fringes that the three great religions—Judaism, Christianity and Mohammedanism—originated.

The last mentioned religion, the newest of the three, was founded by Mohammed, an Arab of Mecca, whose teaching is embodied in the Koran. This religion accepted Mohammed as the Prophet of God, enjoined at least one visit to Mecca, and abstinence from alcohol. So zealously did the Arabs wage holy war against the infidels that within a few years of Mohammed's death in 632 A.D., they had established an empire that stretched from the Atlantic to the frontiers of India. Their capitals, Baghdad, Basra, Cairo, Kairwan, Cordova, etc., were on sites enjoying similar dry sunny climates to that of Arabia and necessitating irrigation schemes. These sites give the false impression that the Arab was entirely a landsman. It is on record, however,

that he sailed regularly to India, while Arab colonies were planted along the east coast of Africa as far south as the Transvaal.

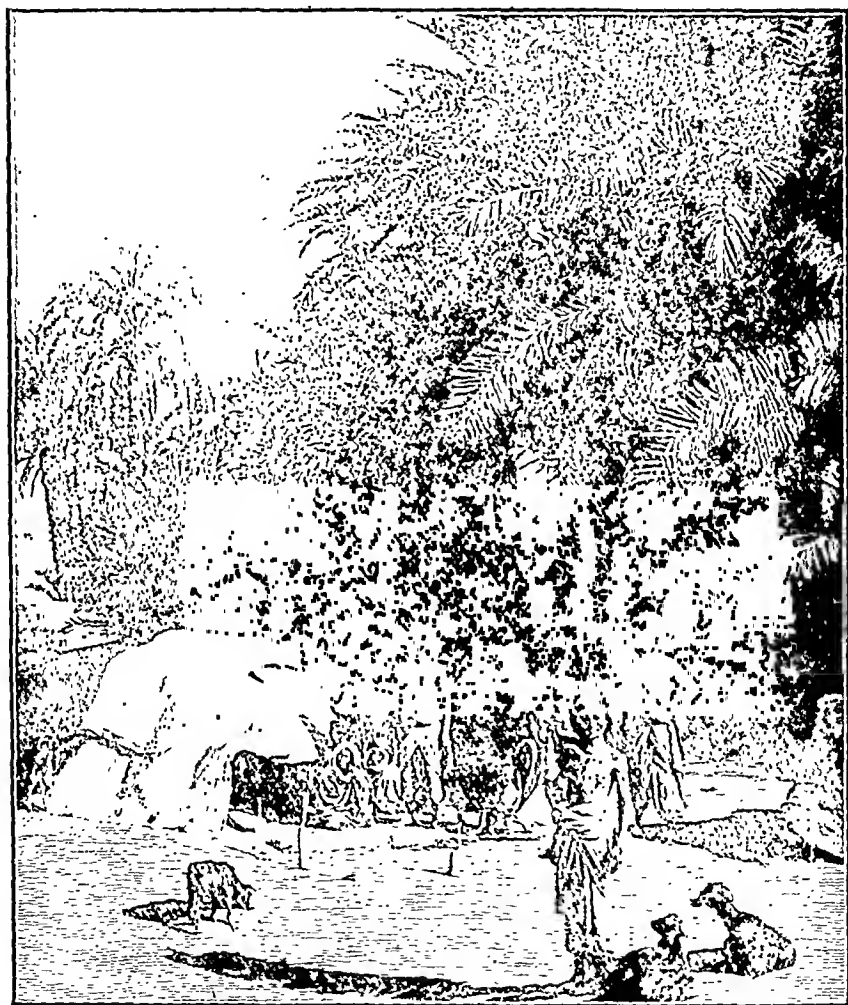


FIG. 13.—ARAB HOME AT A DESERT OASIS.

Notice its simplicity ; protection from the sun is all that is required.

Although the Arab empire has long ceased to exist, Mohammedanism is still the prevailing religion in the African and Asiatic regions over which the empire extended.

EXERCISES.

1. With regard to the Arabs (Bedawins) show how the climate has affected their mode of life.
2. Compare Arabia and Spain in as many ways as you can.
3. Compare the waters of the Red Sea with those of the Baltic, accounting for the differences.
4. Estimate the value to Britain of (a) Aden, (b) Suez Canal.
5. Write notes on (a) Mecca, (b) Mascat, (c) Yemen.
6. Draw a map of the Red Sea, inserting (a) Suez Canal, (b) chief ports, (c) old route to Egypt, (d) products of Arabian coast.

LESSON IV.

'IRAQ OR MESOPOTAMIA

TRADE OF IRAQ.

Imports.		Percentage.	Exports.		Percentage.
Cotton goods	- -	12	Dates	- - -	40
Sugar	- - -	8	Wool	- - -	14
Grain	- - -	5	Grain	- - -	9
Tea	- - -	3	Hides and skins	-	6
Total	- - -	£11.3 millions	Total	- - -	£6.7 millions
(G.B. 30%, India 23%.)			(G.B. 25%, U.S.A. 20%, India 18%, Persia 15%.)		

1. Examine the above table, and answer the following questions :

(a) By what route would the greater part of the trade be conducted ?

(b) Explain the large sugar import by reference to the exports.

(c) What light do the imports and exports throw on the climate of Mesopotamia ?

2. What is the general nature of the exports ?

Extent. As a regional unit 'Iraq or Mesopotamia includes much more than the land between the two rivers. (Mesopotamia = between two rivers.) It extends from the Persian Gulf to the Kurdistan uplands in latitude 38° N., while its flanks are enclosed by the wall of the Syrian desert on the one hand and by that of the Zagros chain on the other.

From the gulf northwards to about lat. 35° N., a distance of about 500 miles, the surface is an alluvial flat marking the original head of the Persian Gulf. The composite soil of this area is extraordinarily fertile, as the parent rocks are the red sandstones and volcanic rocks of the Armenian uplands. Beyond latitude 35° N., the level rises steadily until it merges into the foothills of Kurdistan; in striking contrast to lower Mesopotamia, this is a stony waste.

Climate and vegetation. The temperatures of lower Mesopotamia are practically those of the isotherm maps. Baghdad, with a maximum of 92° F. and a minimum of 50° F., has a mean temperature of over 70° F. for six months in the year, the rainfall during this period totalling about 2 inches. The winter temperature is approximately 60° F. for four months, and therefore high enough to ripen wheat, which is here a winter crop.

Upper Mesopotamia is cooler and has a heavier rainfall (10 ins.), but the porous, gravelly soil is more arid than that south of Baghdad. The whole of Mesopotamia is therefore *steppe*, or *marsh* near the rivers, clothed with thin grass during spring and early summer. At that season it is visited by crowds of nomads from the adjoining hills.

Euphrates. The Euphrates is the longer and less important of the two Mesopotamian rivers. The source of its water is the rainfall and melted snows of Armenia. In early summer the river is in flood, and small steamers can ascend to Meskenah, only 60 miles west of Aleppo; towards late summer the waters are fordable in the lower reaches. During the latter period traffic upon it is by rafts supported by inflated sheep skins. The river divides into three branches, on one of which—the *Hilla*—now ending in a salt lake,

stood the ancient city of **Babylon**. In the last seventy miles the channel threads an uncertain way through marsh and fresh-water lakes. During the whole of its length in Mesopotamia the river has neither an important town on its banks

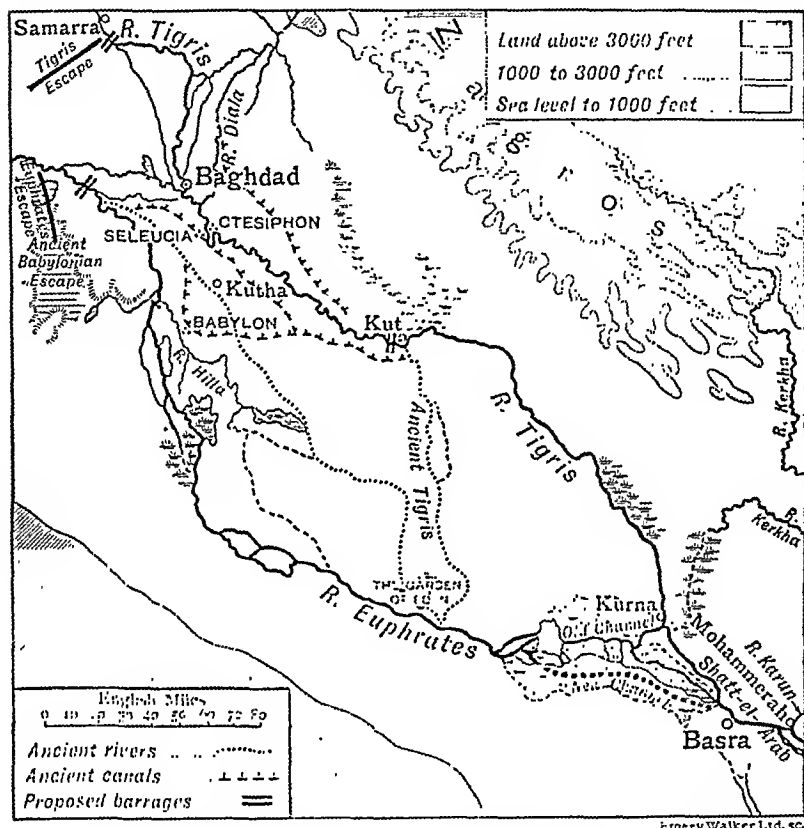


FIG. 14.—LOWER MESOPOTAMIA. Note the Key.

nor a single large tributary; its similarity to the Nile is most marked.

The Tigris. This river also originates in Armenian glaciers, but in nearly every other respect it offers a marked contrast to the Euphrates. Left-bank tributaries—the two Zabs, Diala and Kerkha—bring in melted snows from the Zagros chain and thus the level of the river is maintained. The amount of mud brought down by the Tigris is enormous,

for the surfaces which its tributaries drain have been weathered to powder by the intense summer heat and winter frost. The tide travels nearly 100 miles up both rivers, and the mud deposited in consequence causes floods near their junction.

The combined waters form the *Shatt-el-Arab*, into which flow also the waters of the intensely muddy *Karun*; ocean steamers drawing 21 feet can reach *Basra*, over 60 miles upstream—where the *Shatt* is nearly half a mile broad.

History.¹ Although alternating now between a sandy, pebbly expanse and an intermittent swamp, Mesopotamia was at various times in the past the seat of many mighty and populous empires. Sharing the torrid heat and rainlessness of the surrounding deserts, this area was converted by irrigation works into the condition of a garden. Of the great nations that at various times held sway in this region two, Assyria and Babylonia, were by far the most famous. *Assyria*, whose western boundary was the Tigris river, had its capital at *Nineveh*, above the junction of the Tigris and the upper Zab. Here a dam built across the river spread the water through irrigation channels over a wide area. The importance and prosperity of Nineveh were further increased by its position at a point where camel tracks from the hills converged on the river. The modern town of *Mosul*, standing on the opposite bank, is a bazaar town on that account (Fig. 3).

But far more ancient and magnificent than the Assyrian empire was that of *Babylonia*, which included all the land lying between the Tigris and the foot of the Syrian desert from latitude 34° N. southward to the Gulf. A nation of irrigation engineers, the Babylonians employed thousands of captives in building dams and digging canals by whose waters they "sat down and wept." Thus the flood waters of both rivers and their tributaries were controlled; instead of rushing to their confluence and inundating the adjacent areas, they were led off in canals over a wide expanse of thirsty country.

¹ See p. 9.

Of one set of canals the capital, Babylon, was the focus. The main feeder of these was a huge canal running from the Euphrates to the Tigris, and when the waters of this canal were diverted, Babylon was ruined. Other empires succeeded that of Babylonia, but always their chief city—Seleucia, Ctesiphon, Baghdad—lay on the Tigris close to where the Euphrates canal brought in its waters. This was the point where the road from Persia through the Zagros Pass struck the river.

In course of time wave after wave of nomads poured into Mesopotamia from the surrounding steppes and deserts, and devoured the work of years like so many human locusts. The dams fell into disrepair, the canals silted up, the gardens reverted to steppe, and the confluence to a swamp.

—Irrigation Schemes. The Turkish Government before the war had in hand the construction of irrigation works. Barrages, or dams, were to be built at intervals across both rivers from lat. 34° N. southwards, canals made to carry off water, and reservoirs or escapes provided to regulate the flow during times of flood. It is hoped that eventually the whole of southern Mesopotamia originally cultivated will again be made fruitful. The country possesses all the natural conditions for the successful cultivation of cotton, rice and tropical fruits, viz. abundance of water, cloudless skies, alluvial soil and absence of frosts. The high percentage of lime (15 per cent.) in the soil renders it specially suited for cotton, and it is estimated that the outlay on the works (£6 millions) will be repaid in a few years by the cotton crop alone. The date palm is a native of this area, and the vine, oranges, figs and peaches grow equally well. The rivers may be rendered of less use for transport, but the Baghdad railway will provide an opportune substitute. Oil has recently been found at Kirkuk and Khaniquin (p. 9).

The Garden of Eden is now considered to have lain at the junction of the ancient Tigris and ancient Euphrates. In such a position it would be watered annually by the floods (translated "mist" in the Bible, Gen. ii. 5,6).

EXERCISES.

1. Compare the Tigris and Euphrates in as many ways as you can.
2. Mesopotamia and Egypt were the seats of mighty empires in ancient times. What advantages did they possess over hot desert or hot forest lands?
3. Why are irrigated areas in hot dry climates so suited to the growth of fruits? Give examples of such areas from Asia, America and Europe. State the source of moisture in each case.
4. Write notes on (a) Mosul, (b) Garden of Eden.
5. Account for the importance in ancient times of Baghdad, and of Basra in modern times.
6. On a large sketch map illustrate the position of Baghdad by inserting the lines of communication meeting there.

LESSON V.

PERSIA.

1. Calculate the slope of the Zagros foothills in order that Shustar (lat. 32° N.) may have a vertical mid-day sun on June 21.
 2. Examine Fig. 19, including its scale, and estimate the average gradient from Bushire to the summit of the pass to Shiraz (6000 ft).
 3. Camels take 35 days and donkeys 25 days to reach Kerman from Bander Abbas. Estimate the average daily mileage of each.
 4. Camel caravans reach Bander Abbas from Meshed in 120 days. Find the average distance traversed daily in the Meshed-Kerman section.
 5. (a) Calculate the density of population of Persia from the following figures :

Area	-	-	-	628,000 sq. mls.
Population	-	-	-	$9\frac{1}{2}$ millions.
- (b) Compare the population density with that of (i) Scotland, (ii) Ireland.

TRADE OF PERSIA.

TABLE I. IMPORTS.

48 krans = £1.

	Million Krans.	Country.
Cottons - - -	250	G.B. 140, B. Ind. 73.
Sugar - - -	130	Russia 60.
Tea - - -	70	British India 63.
Mineral oils - -	30	Russia 28.
Cereals - - -	26	Russia 15.
Rice - - -	18	British India 17.
Total - - -	800	B.E. 50%, Russia 30%.

TABLE II. EXPORTS.

	Million Krans.	Country.
Mineral oils - -	654	G.B. 350, British India 90.
Carpets - - -	122	U.S.A. 70, Turkey 23, G.B. 14.
Opium - - -	90	Russia 60.
Raw cotton - -	60	Russia 53.
Rice - - -	40	Russia 40.
Total - - -	1104	Br. Emp. 44%, Russia 20%.

6. (a) Account for the large import of sugar, supporting your answer by reference to the table of exports.

(b) Cottons are imported and raw cotton exported. Account for this.

(c) Where is the cotton grown, and by which route will it leave the country?

(d) What fraction of the cotton imports is from the British Empire? By what routes will most of the cottons enter Persia?

Extent and Relief. Persia occupies the western and major portion of the Plateau of Iran. Except on the east it is girt

by high mountains which in the south and north rise very sharply from the adjacent seas and plains. The centre is much lower than the mountain rim, and many rivers drain inland either to salt lakes or salt-encrusted depressions. Persia includes two lowland strips outside the plateau, viz.

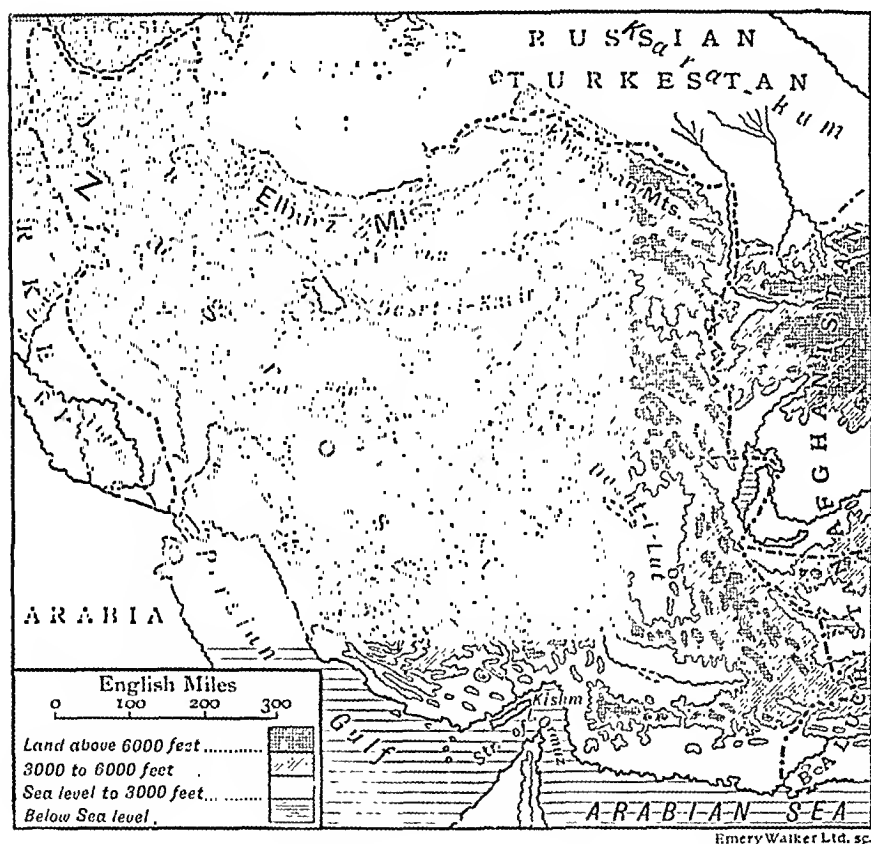


FIG. 15.—PERSIA : PHYSICAL.

along the southern shore of the Caspian Sea, and at the head of the Persian Gulf.

Climate. In summer Afghanistan and Baluchistan are a low pressure area to which dry hot winds blow across Persia from the north-west; there are no winds off the sea. The day temperatures are very high in the valleys and desert centres, there being little cloud and, at that height, little air to shut off or absorb the sun's rays. Shade temperatures of

100° F.-115° F. are usual, and it is claimed that in parts of eastern Persia an egg can be cooked by the unshaded summer sun. The night temperatures are low, and there are valuable deposits of dew; diurnal temperature ranges of 60° F. to 70° F. are common.

In winter Persia is swept by strong north-east winds, called *shumal*, which deposit heavy snows on the high northern and south-western mountains. The winter climate is very severe, 30° F. of frost being frequent at Isfahan.

Trees grow sparingly on the snow-clad hills, and there are good feeding grounds in the valleys; grass grows for a few weeks on the lower interior, but is soon burnt up. The important parts of Persia are, therefore, the mountain rims and the two lowland strips; the centre is desert.

Northern Highlands. These consist of the *Elburz* range and the *Khorasan* mountains. The former is a single range; on the southern flank stands *Mt. Demavend* (19,000 ft.) a lofty volcanic peak, now extinct except for occasional steam vents in its sides; it can be seen for 150 miles. The northern face of the *Elburz* is heavily wooded and seamed by many fast-flowing rivers, the southern face is bare and rocky.

At the foot of *Mt. Demavend* stands *Teheran* (280), the capital and largest city in Persia. Situated between the mountains and the desert, on the great north road from *Meshed* to *Tabriz*, and at the focus of routes from *Mesopotamia* and the *Gulf* (Fig. 19), it has become a great entrepôt and bazaar town. Its chief manufactures are carpets and iron goods. The steppe land of the district is noted for its horses and the excellent wool of its sheep and lambs—the latter being the well-known “*astrakhan*.”

East of the *Caspian* the mountain border consists of two lower chains (12,000 ft.) known as the *Khorasan Mountains*. *Meshed* (60), in the central valley, is the capital and chief town of the *Khorasan* province, and the Mecca of the *Shiah* *Mohammedans*; the road from *Teheran* is generally crowded with corpse caravans on their way to the sacred city. *Harun-*

al-Raschid of the Arabian Nights is buried there. Silks, cottons, velvets and carpets are made and sold chiefly to Russian merchants. A good road connects Meshed with Askabad on the Trans-Caspian railway. Nishapur, near Meshed, is famous for its turquoises.

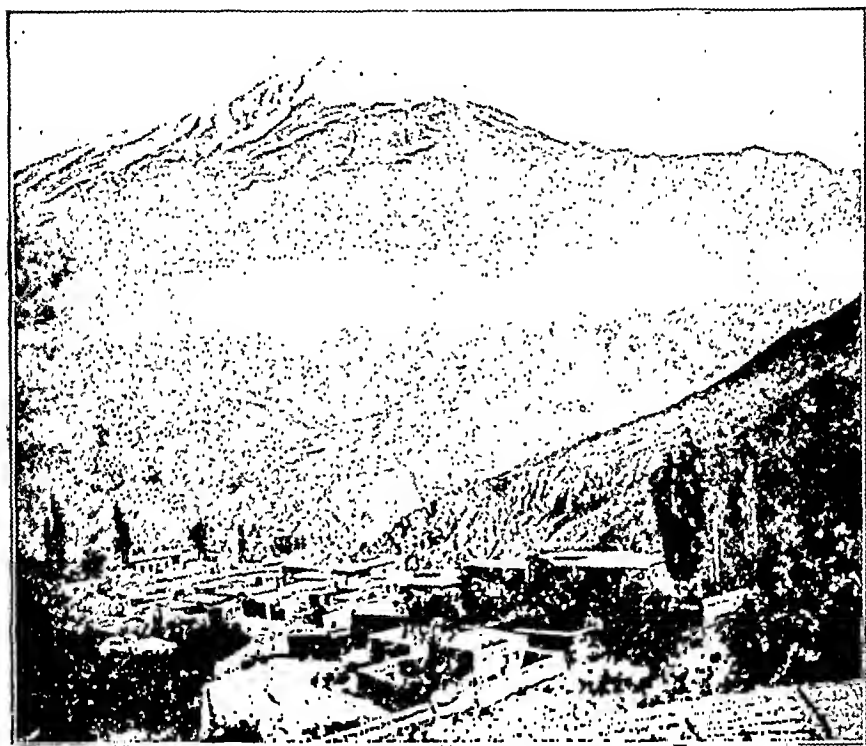


FIG. 16.—MOUNT DEMAVEND.

An almost extinct volcano. Note the flat-topped houses typical of rainless regions. The peak is snow-capped, and can be seen 150 miles.

The district from Meshed to Teheran is extremely unsettled—brigandage being common. The whole Khorasan province abounds in ruined waterways and abandoned villages, and possesses now only a fraction of its former population.

Caspian Littoral. This long narrow strip, constituting the provinces of Gilan and Mazandaran, is the most fertile part of Persia. Protected by the Elburz range, and receiving a heavy rainfall, this region has a sub-tropical climate.

Enormous crops of rice, sugar, cotton and fruit are grown in the alluvial soil of the forest clearings round Resht and Barfurush; silk is an important product. Much of the area is marshy, and the climate is highly malarious. The towns are European in style.

South-Western Highlands. The Armenian uplands are continued into Persia as two almost parallel ranges skirting

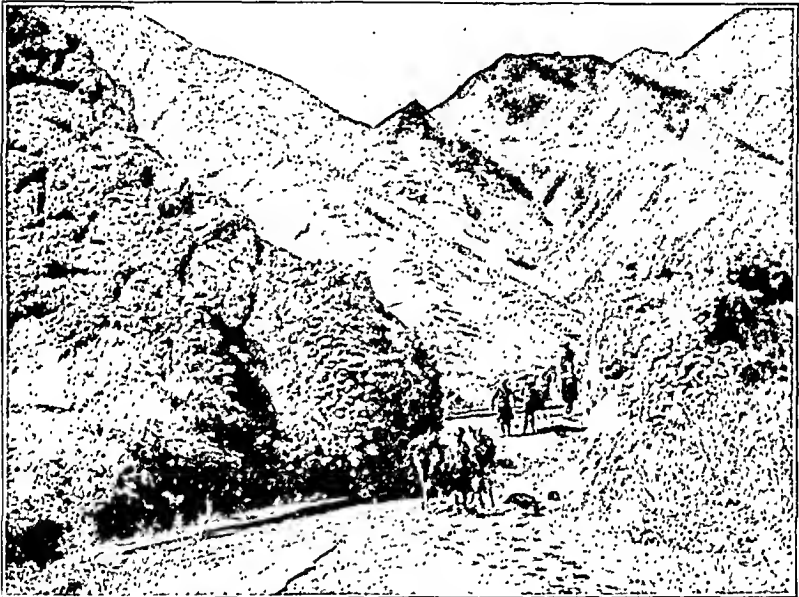


FIG. 17.—A PERSIAN ROAD LEADING THROUGH A *Teng* IN THE ZAGROS MOUNTAINS DOWN TO THE GULF.

The greater part of the road is worse than this.

the Caspian on the east and Kurdistan on the west. Between them lies Azerbaijan, the most settled and most fertile part of the Persian plateau. Earth tremors are frequent, Tabriz having twice been partially destroyed in the last two centuries. The western part of the province drains into Lake Urmia (salt); the chief crops of this basin are tobacco, wheat, maize and cotton. Azerbaijan is now part of Soviet Russia.

Tabriz (200), on the Teheran road, is the chief town; its importance has been greatly increased by the recent extension

of the Russian railway from Julfa ; the Tabriz-Teheran block has been commenced.

South of Azerbaijan the plateau character changes to a series of parallel limestone ranges overlooking Mesopotamia and the Persian Gulf. These ranges, known collectively as the **Zagros Mountains**, reach in **Mount Kuh-i-Rang** a height of 12,800 feet, and have an average width of 200 miles. Communication with Mesopotamia and the Gulf is most difficult ; the routes follow the ravines (**tengs**) by which the tributaries of the Tigris break through the mountain rim.

Nomadism. The extreme elevation of the valleys of the Zagros Mountains gives them a long severe winter, and at that season the shepherds drive their flocks to the Gulf coast or the Tigris lowlands, which are, in consequence, equally unsettled ; as summer approaches they return to the cooler mountains.

The seclusion of the valleys has developed the **clan system** with its patriarchal rule, blood feuds, robbing excursions and utter disregard for law and order. Most notorious for lawlessness and savagery are the Lurs of Luristan and Bakhtiari.

Kermanshah (65), **Sultanabad** (50) and **Hamadan** (55), in high valleys, manufacture carpets and leather, and export, in addition, tobacco and gum tragacanth. The high quality of Persian carpets is due to their being hand-made, of excellent wool, and dyed with vegetable dyes.

Irrigation. The towns fringing the inner slopes of the Zagros Mountains—Shiraz, Kerman, Isfahan, etc.—depend on melted snow, and are mostly oases. The water is brought in many cases either by underground rivers or underground canals. The latter, called **kanats**, were dug by captives in a distant past, and the majority have been allowed to silt up ; thus their courses are marked either by orchards of almost every kind of fruit tree, or by long lines of ruined villages. Persia possesses now neither captives nor resources by which either to restore these old waterways or dig new ones.

Central Deserts. The heart of Persia is desert with an average elevation of 1000 feet. It marks the bed of an

ancient salt sea which once stretched from Kasvin to Baluchistan (500 m.). Higher ground, now followed by a caravan route from Shiraz to Meshed, divides it into two portions, the Dasht-i-Kavir and Dasht-i-Lut.

The **Dasht-i-Kavir**, or Great Salt Desert, is swampy in winter, and contains at that season many shallow lakes. By late summer, the water has disappeared, leaving a

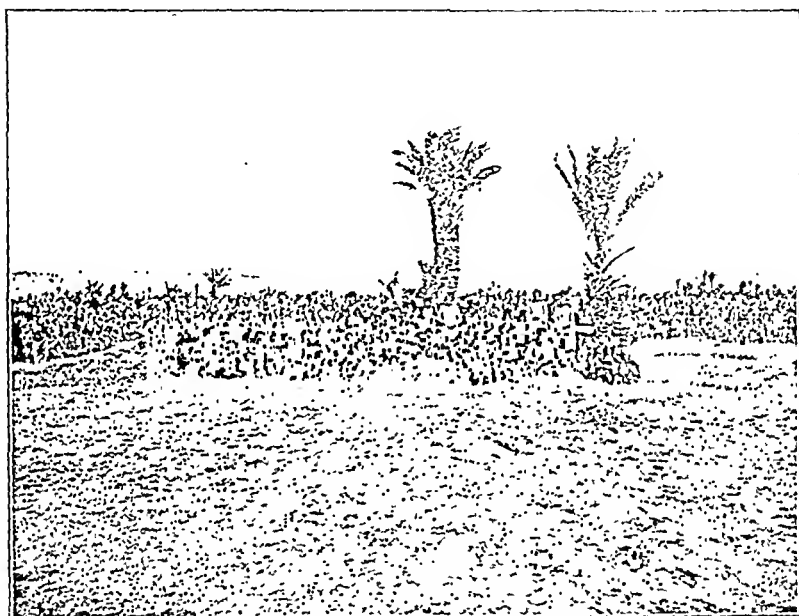


FIG. 18.—AN OASIS IN THE GREAT SALT DESERT OF PERSIA (FIG. 15).

glittering salt expanse. Here and there are miles of solid rock-salt many feet in thickness.

The **Dasht-i-Lut**, or Great Sand Desert, is the smaller but more terrible of the two. Its surface is covered with shifting sands beneath which is salt-impregnated mud; it is probably the hottest area in Asia. Both deserts are devoid of vegetation.

Trade and communications. Means of communication are in a backward state. The only railway runs from Julfa to Tabriz—with projected extension through Kasvin to Teheran,

and there are two hard roads suited for wheeled vehicles leading to Resht and Askabad. Elsewhere transport is by pack animals. The greater part of Persian trade is with Russia (60 per cent.) and the British Empire (20 per cent.). Owing to the mountain rim the country is difficult of access. Bands of robbers infest all the communication routes, but especially those from the Gulf coast; at one time piracy abounded in the Gulf also, until it was stamped out by British gunboats.

The pack animals, with their loads, are: camels (400-500 lbs.), mules ($\frac{2}{3}$ camel) and donkeys ($\frac{1}{2}$ camel).

Entry from the south is from the following points:

1. Bander Abbas (10), a heat-stricken harbourless port. A route leads thence to Kerman (65), famous for its shawls and carpets—the latter made of cotton and the former of the under wool of goats.

2. Lingah, with roadstead protected by Kishm island. The route inland leads to Kerman. Centre of the Gulf pearl industry.

3. Bushire, the chief port, similarly harbourless, is the starting point for Shiraz (50), the capital of Farsistan (ancient Persia). Standing on an oasis, Shiraz is famous for its roses, from which a perfume is made, and as the home of the Persian poets Sadi (13th century) and Hafiz (14th century). Near by are the ruins of Persepolis, containing the tombs of Darius and other Persian kings. From Shiraz the road leads to Isfahan (80), the former capital, and most interesting city of Persia. Its extensive orchards and grain crops are watered by the Zende Rud, which ends in a salt marsh in the desert. Brass-ware and pottery are manufactured.

4. Karun River, navigable with difficulty by stern-wheel steamers to Ahwaz and Shustar, where, in the summer months, the people live in deep pits to escape the terrific heat.

The chief port is Mohammerah (12), at the junction of the Karun and Shatt; near it, at Abadan, are important oil refineries. Oil and coal—the former worked—abound in the Karun basin, which is now beginning to produce cotton (of excellent quality) and cereals. The oil reaches Abadan by 150 miles of pipe-line.

5. Baghdad is the starting point to the famous carpet district round **Kermanshah** and **Sultanabad**; over 10,000 people are employed in the carpet industry in and around the latter town.

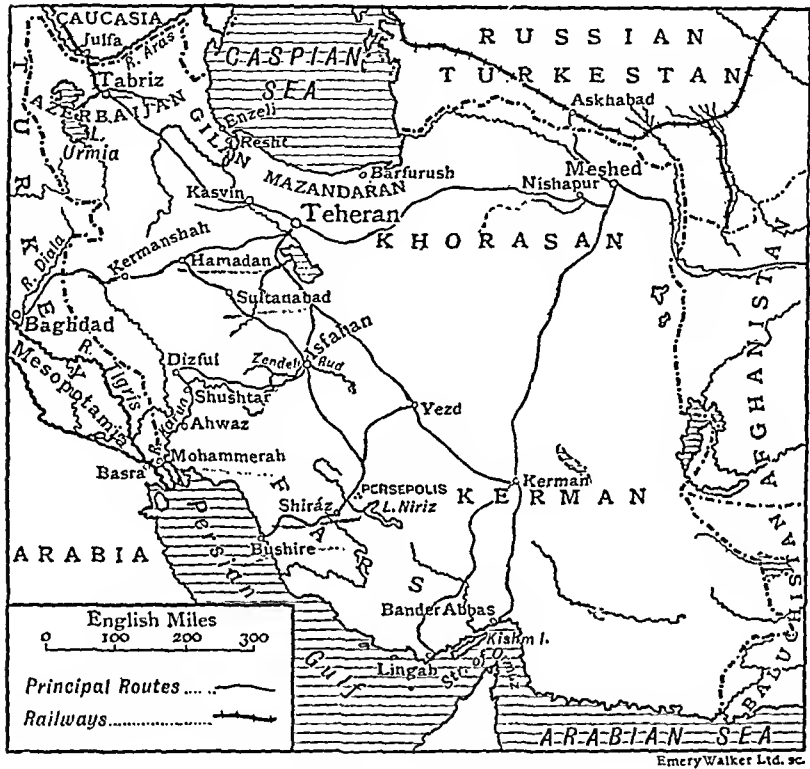


FIG. 19.—PERSIA : POLITICAL.

EXERCISES.

1. What are kanats? What evidences are there in Persia of former greatness and prosperity?
2. Point out various ways in which an enlightened Government could assist in the development of the resources of Persia.
3. Write notes on (a) Persian carpets, (b) Tengs, (c) Shumal.
4. Compare the Persian Gulf with (a) the Red Sea, (b) the Adriatic Sea.

5. Draw a sketch map of Persia, inserting upon it (a) chief trade routes, (b) chief towns, (c) chief frontier towns to which the routes lead, (d) chief products.

6. Draw a relief map of the eastern frontier of Persia. Indicate upon it (a) boundaries, (b) rivers, (c) railways, (d) Seistan.

LESSON VI.

AFGHANISTAN AND BALUCHISTAN.

1. Estimate the distance travelled by troops from Kushk to (a) Kabul, (b) Kandahar.

2. Estimate the distance travelled by troops between Karachi port and (a) New Chaman, (b) Peshawar.

3. Draw a section from Merv to the Indus through Kandahar, horizontal scale twice that of Fig. 20, vertical scale 1 inch = 6000 ft.

AFGHANISTAN.

Buffer State. Eastern Iran, consisting of Afghanistan (250,000 sq. mls.) and Baluchistan (135,000 sq. mls.), is a mountainous barren expanse, deserving only of notice through its position between the empires of India and Asiatic Russia. As we shall see later, all the hordes that have invaded India in the past made their entry through the narrow defiles leading into the Indus valley from eastern Iran; on other sides a land invasion was impossible. So long as Persia, poor and thinly populated, held sway over western Iran and the plains of Turan, invasion was but a remote possibility.

During the nineteenth century, however, Russia pushed her Asiatic boundary southward in an alarming manner, driving Persia within the Iranian plateau, and, by constructing a railway from the Caspian to Merv, with a branch to Kushk, put herself within striking distance of India.

To secure the western frontier of India, Britain in 1907

arranged a treaty with Russia whereby each country agreed neither to annex nor occupy any part of Afghanistan. A

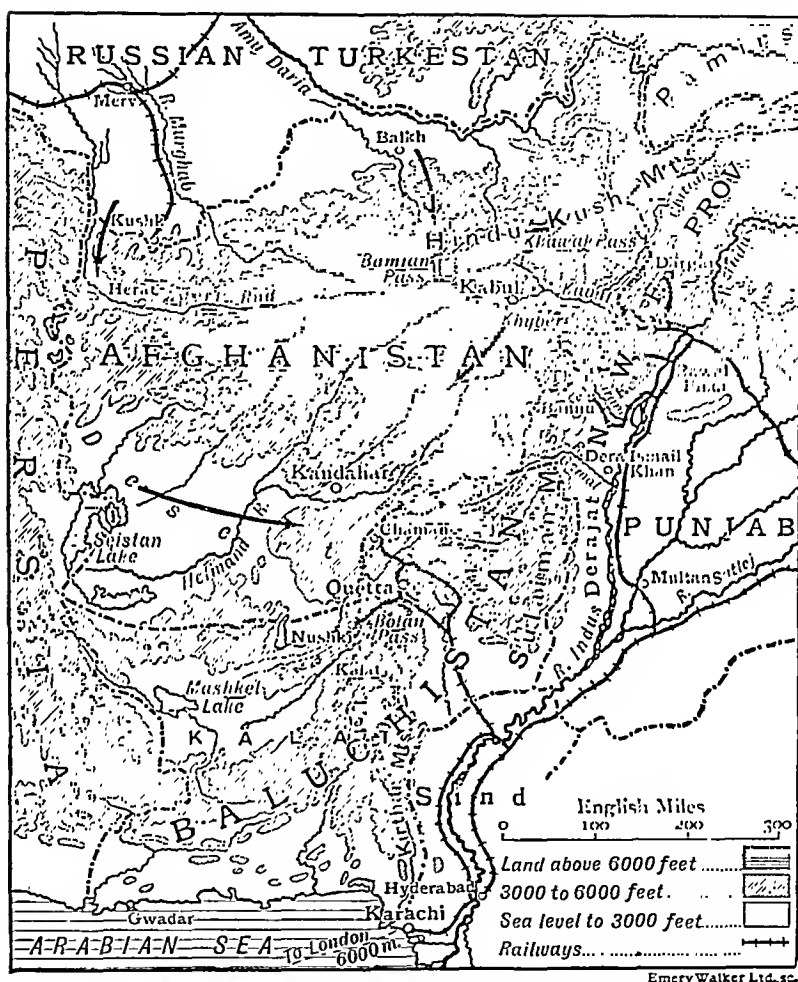


FIG. 20.—COUNTRIES ON THE N.W. FRONTIER OF INDIA.
The arrows show the possible lines of invasion.

treaty concluded at the same time with Afghanistan forbade intercourse with other countries except through the British Government. Afghanistan is thus a buffer state.

Relief and rivers. Afghanistan is almost wholly mountainous. The Hindu Kush range extends south-westward

from the Pamirs through the heart of the country. At only one point (Khawak Pass) can this range be crossed at a lower elevation than 10,000 ft. Many rivers seam the northern slope, carrying melted snow towards the Amu Daria; some fall a prey to the sun before that river is reached. The **Heri-Rud** flowing westward passes Herat, as a full-bodied stream, but fades to nothing in the Karakum desert; the **Murghab** shares a similar fate in the oasis round Merv.

Of the rivers draining the southern face, one, the **Kabul**, runs to the Indus and thus to the sea; the others, of which the **Helmand** is the chief, end in the **Seistan swamp**. This swampy depression, now almost deserted, is scattered with the ruins of Arab cities, the splendid canal system on which they depended having been destroyed by Genghiz Khan in the twelfth century. As the oasis might be restored by an enemy and become the starting point of an attack on India, the British Government has declared S.E. Persia to be a British sphere of influence; thus any invasion of Seistan would be considered an act of war. This policy has considerably strengthened the plan of frontier defence.

Products and towns. Cultivation is confined to a few fertile valleys. Two harvests of wheat, barley and rice are grown annually, and there are extensive orchards of stone fruits such as plums, apricots, peaches, cherries, while grapes, figs, apples and pears are also grown in great abundance. Fat-tailed sheep are reared; their wool is made into carpets, and the grease of the tail is used in place of butter. Assafoetida is an important plant product. There are lead and copper mines near **Kabul** (150), the capital, which is a comparatively important industrial town. The importance of this town, however, is due to its strategic position at the western end of the Khyber Pass. An invading army from the Hindu Kush passes, and heading for either the Khyber or the Bolan, must pass Kabul. Similarly, an army approaching these passes from Seistan must pass **Kandahar**. Both towns are strongly fortified.

Herat and Balkh (mother of cities) stand on oases fed by glacier water, and are ancient, blood-stained cities.

BALUCHISTAN.

Relief and communications. Baluchistan is an arid limestone plateau ribbed by ranges of lofty fold mountains.



FIG. 21.—CHAPPAR RIFT, IN THE BOLAN PASS.

The construction of the railway through the pass to Quetta and New Chaman presented great difficulties.

In the south the ranges trend with the coast which is thus rendered almost inaccessible; while in the east they run due north, shutting off the Indus plain. The interior of the country is at a lower level than the mountainous girdle, and contains several salt lakes.

The Bolan Pass, rising steeply from the Indus plain, offers a very difficult entry to the country between the Kirthar and Sulaiman ranges. It is strongly guarded by forts at Quetta and New Chaman, the latter being the present terminus of a railway through the pass from Karachi. Materials for

the extension of this railway to Kandahar are stored at New Chaman to be used in a sudden emergency. A line from Quetta through Nushki to the Persian frontier has recently been opened.

Political divisions and products. The area is divided almost equally into **British Territory** and **Native States**. The former comprises a strip of territory along the whole Afghan frontier—mostly barren mountains, arid deserts, and stony plains. Flock-owning, camel-driving and agriculture are the chief occupations. Much encouragement is being given by the Indian Government to the planting of fruit and timber trees, and to the breeding of horses for the Indian army. Coal is mined near Quetta which, with Chaman and Nushki, are the only towns.

The **Native States** occupy the southern portion of Baluchistan. Food grains, such as wheat and rice, are produced, while fruits of all kinds are grown in abundance. The chief exports are blankets and rugs of high quality, and raw wool. Kalat, built in terraces and with mud walls, is the chief town.

EXERCISES.

1. What is a buffer state? Give examples in Europe.
2. Enumerate the various steps taken by the Indian Government outside the boundary of India Proper to safeguard the north-western frontier.
3. Write notes on (a) Seistan swamp, (b) Afghan rivers.
4. Estimate the importance to India of (a) the Hindu-Kush Mountains, (b) Quetta, (c) Sulaiman Mountains.
5. What is a " Sphere of influence " ?
6. Show by a sketch map the routes of Armies invading India from the Caspian Sea. Insert important places on each route.

PART II.

THE MONSOON REGION.

LESSON VII.

THE MONSOONS.

	Asia.	MONSOON REGION.				
		India.	China.	Japan.	Indo-China.	East Indies.
Area (million sq. mls.)	17.5	1.8	1.5	0.15	0.63	0.9
Population (millions) -	830	315	302	52	29	47

1. Draw rectangles, of one inch base, to show :

(a) The ratio of the area of the Monsoon Region to that of Asia.

(b) The ratio of the total population of the Monsoon Region to that of Asia.

(c) The ratio of the density of population of the Monsoon Region to that of Asia.

2. Assuming that the sun's rate of departure from and approach to the celestial equator is constant (p. 18), estimate :

(a) The dates, roughly, when the sun is overhead at (i) Colombo, (ii) Canton.

(b) The number of days there is a vertical sun in India.

3. Examine Figs. 25. 26. Estimate the annual temperature range at each of the following places : (i) Lhasa, Calcutta, (ii) Leh, Shanghai, (iii) Colombo, Batavia.

4. Examine isobar maps in your atlases, and then fill in the following pressure data :

		30° N.	Equator.	30° S.	Wind direction.
170° W. (Mid-Pacific)	Jan.	-			
	July	-			
	Range				
80° E. (Mid-Asia, etc.)	Jan.	-			
	July	-			
	Range				

(a) How does the pressure vary in Mid-Pacific (i) throughout the year, (ii) from 30° N. to 30° S. ?

(b) How does the pressure vary throughout the year along meridian 80° E. (i) in Mid-Asia, (ii) in 30° S. (Indian Ocean) ?

(c) Where is the pressure range (i) greatest, (ii) least ?

5. RAINFALL STATISTICS FOR CERTAIN ASIATIC TOWNS (INS.).

	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.
Bombay	—	—	—	—	0.5	21	25	15	11	2	0.5	—
Rangoon	—	—	—	2	12	18	21	20	16	7	3	—
Osaka	2	2	4	6	5	8	7	4	7	5	3	2
Smyrna	4	3	3	2	1	—	—	—	1	2	4	5
Khiva	1	1	1	1	—	—	—	—	—	—	—	—

Rainfall is usually expressed diagrammatically by means of rectangles as in Fig. 22, where the annual rainfall distribution at Bombay and Smyrna are contrasted. For clearness it is sometimes more useful to plot rainfall *curves* as in Fig. 23; it must be understood, however, that, unlike temperature, rainfall is not a continually occurring quantity as a curve would imply.

6. (a) On same squared paper plot rainfall curves for Bombay, Rangoon and Osaka. How do they agree ?

(b) What types of rainfall are exemplified by Figs. 22, 23 ?

Planetary Winds. The world wind systems, generally called planetary winds, are represented in position and direction by Fig. 24. This scheme is based on two assumptions: first, that the equatorial regions, owing to their

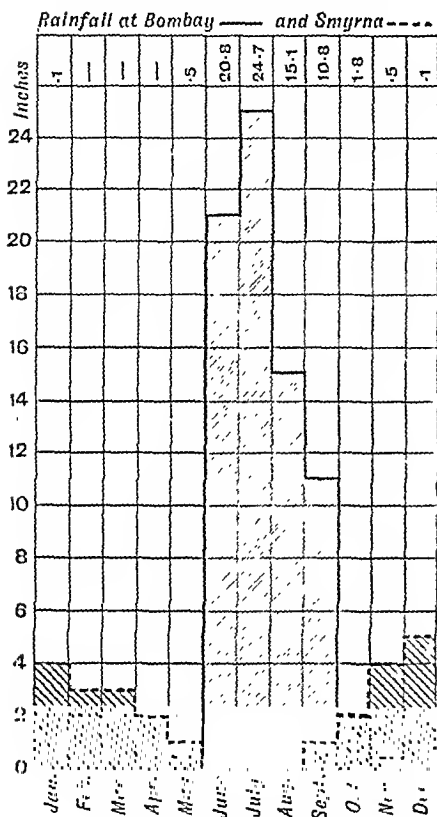


FIG. 22.—RAINFALL Graph FOR BOMBAY AND SMYRNA.

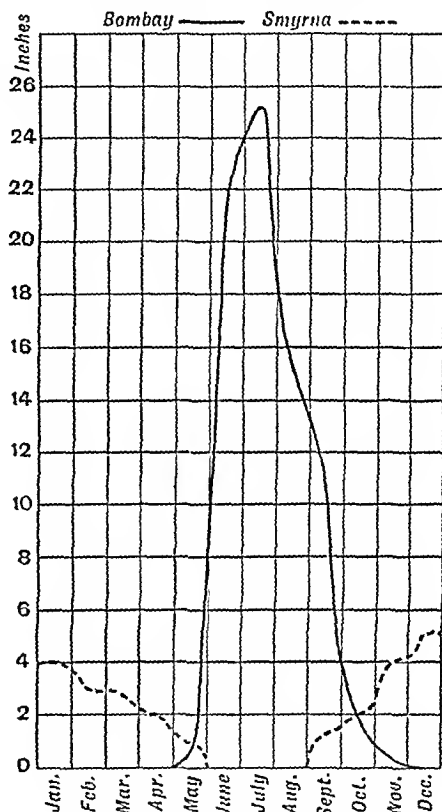


FIG. 23.—RAINFALL Curve FOR BOMBAY AND SMYRNA.

relatively high temperature, are everywhere and at all times a low pressure area; and secondly, that there are two high pressure belts in approximately latitude 30° - 35° N. and S., from which winds blow polewards and equatorwards. If the sun did not "swing" from tropic to tropic, but remained vertically over the equator, and if the earth's surface were covered entirely with water or with rocks of

uniform altitude and capacity for heat, the world wind systems would prevail as in Fig. 24, which is almost a true representation of the wind systems of the mid-Pacific.

When we consider the systems actually prevailing over the continental land masses of Asia, we find considerable variations from the systems in Fig. 24, due (i) to the "*swinging*" of the sun, and (ii) to the fact that land and water behave

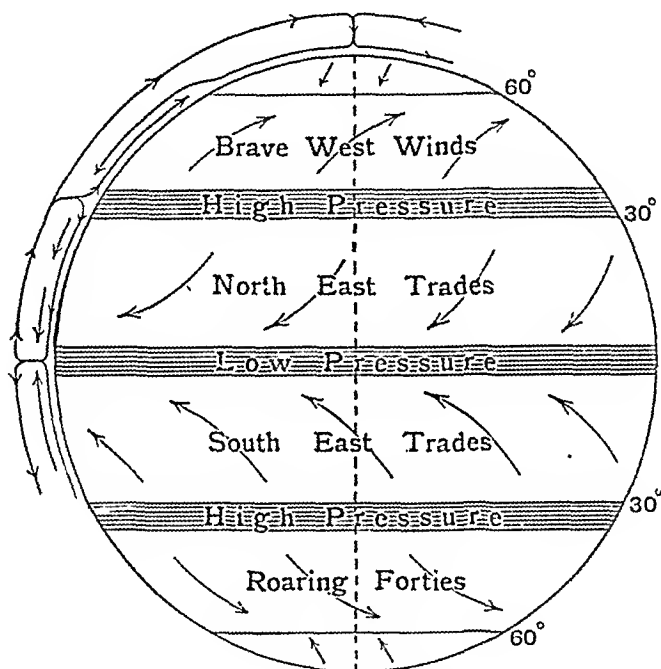


FIG. 24.—PLANETARY WINDS.

differently under the influence of heat. Rocks, having a low specific heat, rise rapidly in temperature when heated, and fall in temperature with equal rapidity when the source of heat is removed; water, on the other hand, having a high specific heat, has smaller and slower temperature changes. Hence land masses in summer reach higher temperatures than the ocean in the same latitude, and fall to lower temperatures in winter; and this variation in temperature causes a corresponding variation in pressure, from a relatively high in winter to a relatively low pressure in summer.

An examination of a globe shows that Asia lies almost totally north of the equator, yet so near to it that its three great peninsulas lie partially, and in one case wholly, within the Tropics. Thus the surface of the globe included between meridians 40° E. and 120° E. is divided by the equator into a northern land division and a southern water division. In July, the heat equator and low pressure belt do not coincide with the geographical equator, but are displaced nearly 30° northwards into the land mass of Asia; in January, the belts are displaced about 15° south on the land masses (Figs. 25, 26). Thus winds blow into Asia in the former season and out again in the reverse direction in the latter (Figs. 27, 28). The name *monsoon*, meaning season, was given to these alternating seasonal winds by the Arabs who took advantage of them in their voyages to and from India.

Summer monsoon. From March 21 to September 23 the sun is north of the equator, and shines vertically during the whole of that period over the Malay Peninsula and Indo-China, and for three months—May, June and July—over Southern India and Arabia. The highest temperatures are reached on the desert and semi-desert plateau lands of S.W. Asia, where mean daily temperatures of over 90° F. are experienced. This area is accordingly the centre of a low pressure system, to which winds blow from all quarters.

A high pressure belt exists over the relatively cool South Indian Ocean in lat. 30° S. (as in Fig. 27), and thence winds blow steadily into Asia. South of the equator they are true S.E. Trades deflected to the left in accordance with Ferrel's Law; beyond that line they veer round to the right, in accordance with the same law, and reach India, Indo-China and the Philippines as south-west winds. These winds are known as the *South West Monsoon*. Into China and Japan they blow from the south-east (Fig. 27), and become the *South-East Monsoon*. Thus, over the northern Indian Ocean, India and Indo-China, the North-East Trades of Fig. 24 are completely displaced in summer by winds blowing in exactly the opposite direction.

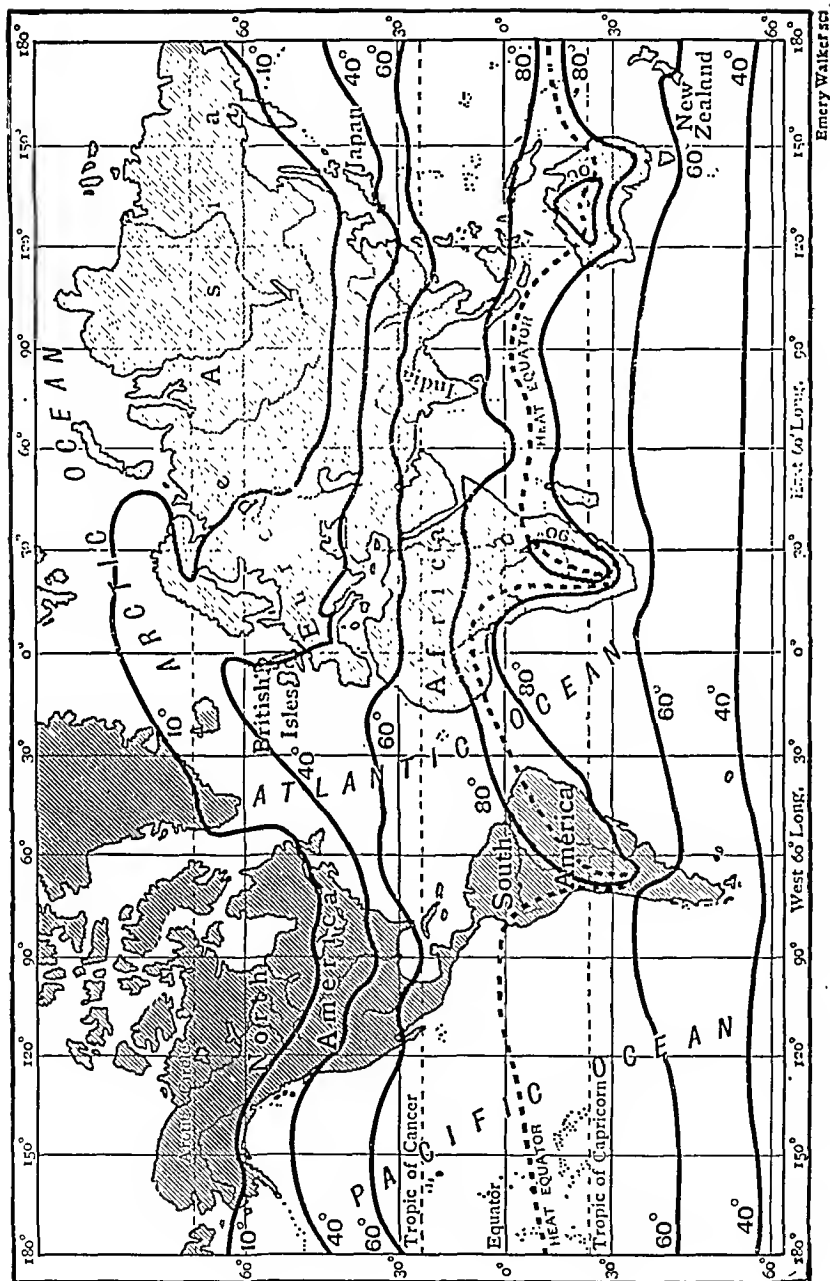


FIG. 25.—WORLD : JANUARY ISOTHERMS.

The sun is overhead near the Tropic of Capricorn—hence the Heat Equator is *south* of the Equator on the land masses.

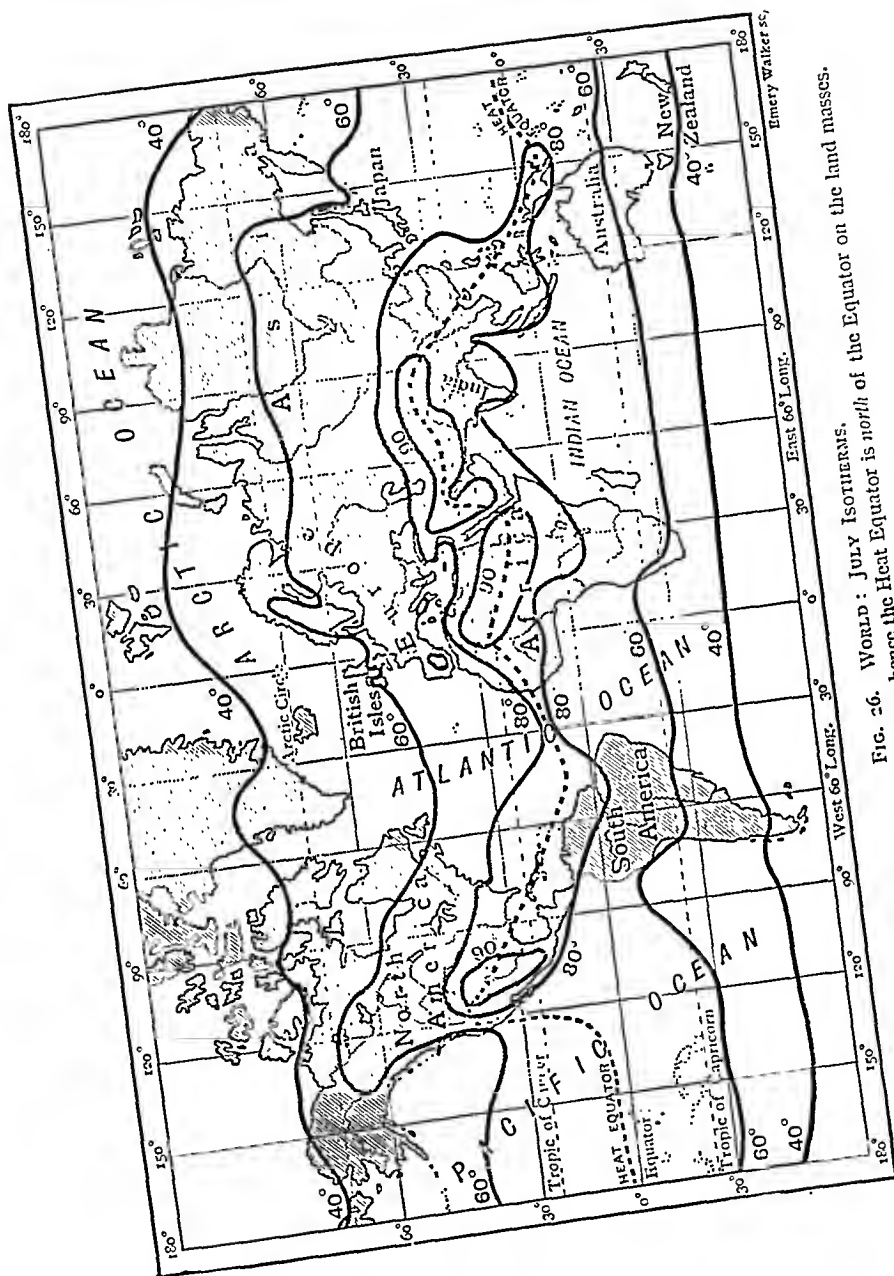


FIG. 26. WORLD: JULY ISOTHERMS.
The sun is overhead near the Tropic of Cancer—hence the Heat Equator is north of the Equator on the land masses.

The monsoon blows over S.E. Asia from about the middle of June to September, reaching China and Japan later than India. Having traversed vast areas of steaming ocean, the summer monsoon reaches Asia at a high temperature and saturated with water vapour. Heavy relief rains fall over the East Indies, India, Indo-China, China and Japan; hot low-lying areas, like the Thar Desert in India, do not participate.

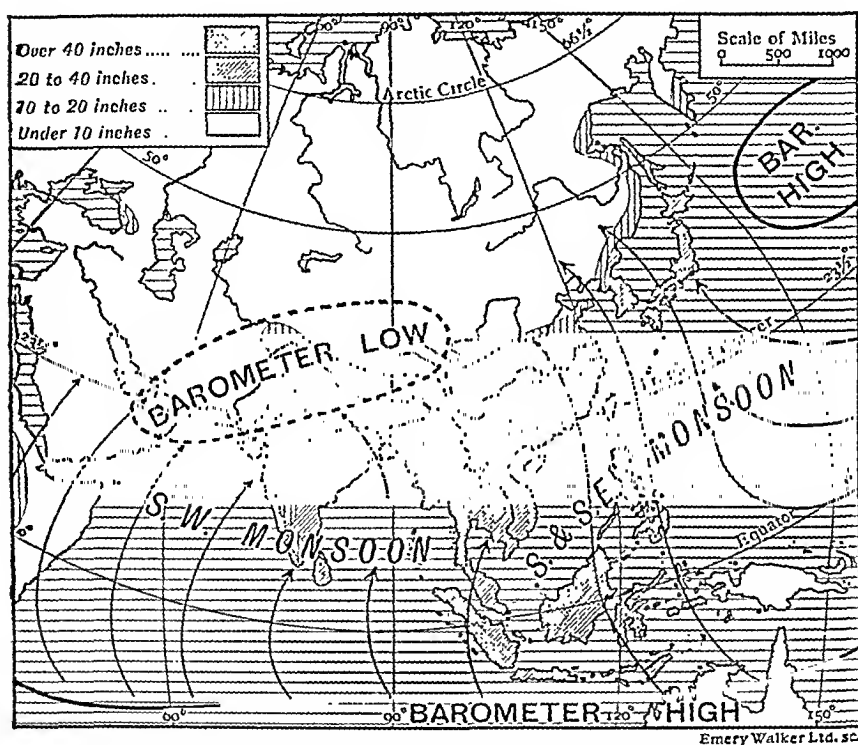


FIG. 27.—ASIA: WINDS AND RAINFALL (MAY-OCTOBER).

Winter Monsoon. The sun re-crosses the equator in September, and by October the low pressure system in Asia has vanished. Cold, heavy air settles down over the centre of the continent, creating a high pressure system which reaches its maximum development by January (Fig. 28). Winds blow out cold and dry towards the low pressure areas over the adjacent oceans. Over India they are the **normal N.E. Trades**, over China and Japan they flow from the north and north-west respectively.

Although dry in their continental stage they pick up moisture when they reach the sea, and thus south-east India, east coast of Ceylon, Indo-China (east coast), East Indies and Western Japan receive moisture from this monsoon, which blows from October to March (Fig. 28).

Effect of Tibet Plateau. The strength of the inflowing summer monsoon is greatly increased by the presence in

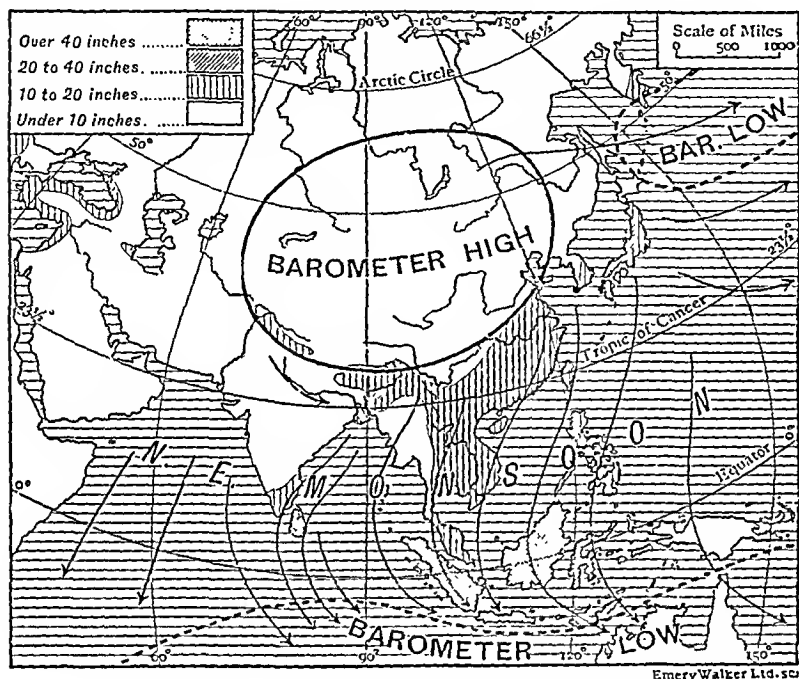


FIG. 28.—ASIA.—WINDS AND RAINFALL (NOVEMBER-APRIL).

Central Asia of the lofty and extensive plateau of Tibet. Air is not heated to any great extent by the *direct* rays of the sun, but chiefly by contact with hot bodies. Direct solar rays heat the earth's surface, and the heat radiates again into the air in a form which the air can readily absorb; thus the atmosphere is heated from below, the temperature falling in an upward direction 1° F. every 300 ft.

Let us consider now the July temperature of the upper air *above* Chungking (China, 29° N., altitude 900 ft., 80° F.) and

at Lhasa (Tibet, lat. 29° N., altitude 12,000 ft., 65° F.). Above Chungking, at the altitude of Lhasa, the temperature will be 37° F. $\left(= \frac{12,000 - 900}{300} \right)$ lower than in Chungking; that is, it will be 43° F. At Lhasa, at the same altitude, the temperature is 65° F., the higher temperature being due to the heat radiated from the hot plateau. Hence the air on

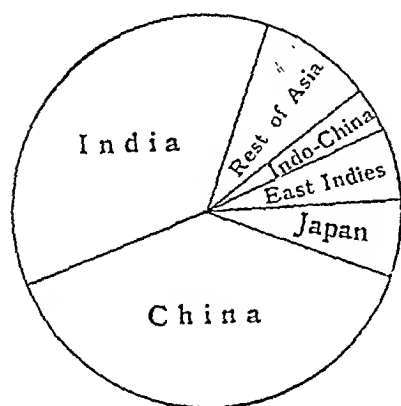


FIG. 29.—SHOWING THE RATIO OF THE POPULATION IN THE MONSOON LANDS TO THAT OF THE REST OF ASIA.

the plateau is less dense than that at the same level above Chungking, and winds will blow in from above Chungking; similarly they will blow in from the Indo-Gangetic plain. This inward draught lessens the pressure in the areas surrounding the plateau, and thus strengthens the monsoon.

General effects of the Monsoons. Receiving a heavy rainfall during the period of highest temperature, the mon-

soon region has a luxuriant vegetation of the tropical and sub-tropical types. Typical trees and shrubs are teak and bamboo (everywhere), palms and rubber trees (Ceylon, Malay Peninsula and East Indies), tea (on the hill slopes), and coffee (East Indies). In the low-lying river basins and deltaic plains, where the soil is alluvial and therefore fertile, and where water can be led at will through irrigation canals, it is possible to grow more than one crop in the year. In parts of India, for instance, successive crops of rice and maize or wheat are frequently grown annually on the same plot. Consequently the river valleys teem with people: in no other part of the world do such dense masses of people congregate solely because of the abundance of food.

China, Japan and N.W. India have relatively cold winters which brace the people and make them hardy and strong; in some parts of India, a desert or semi-desert climate has

served the same purpose. Only in the extreme south—in Ceylon and the East Indies—do the people approximate in character to the true equatorial dweller.

The Monsoon Lands. The area affected by the monsoons includes the whole of S.E. Asia from India to Manchuria, together with the adjoining islands. Latitude and relief give this area a widely varying winter climate, but in every case the summers are hot with moisture-laden winds blowing inwards from the ocean. The following subdivisions can be made:—

- (a) Temperate: This division includes Manchuria, N. Japan, and China, north of the Hwang-ho. The winters are cold, and wheat is the chief cereal.
- (b) Sub-tropical: This division comprises S. China and S. Japan. The winters are mild, and the summers hot and much wetter. Rice is the chief cereal.
- (c) Tropical: This area includes India and Indo-China. The winters are warm and the summer rains very heavy. Double cropping is possible. Parts of these areas are exceptional in being desert and savannah.
- (d) Equatorial: This division comprises the East-Indies and the Philippines. The climate is always hot, but heavy rainfall ensues from both monsoons.

EXERCISES.

1. The mass of the population of Asia is centred in the S.E. Account for this.
2. Account fully for the summer monsoon. Illustrate by a sketch map.
3. Some areas in Asia receive rainfall from both monsoons. Name these areas and account for the facts.
4. What is meant by Ferrel's law? Give instances of its truth.
5. The climate of Central Asia is extreme while that of Ceylon is uniform. Explain this.
6. Draw a sketch map of Asia and shade the area in the S.E. over which the winds are reversed in direction during the year. Insert names of countries.

LESSON VIII

INDIA: RELIEF AND CLIMATE.

CLIMATIC STATISTICS.

Height in feet in brackets.		Jan.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year.
Mangalore (52)	T. R.	76 0.2	78 0.1	81 0.1	83 2	83 8.1	78 37.8	77 37.9	77 23.1	77 11.3	78 8	78 1.9	77 0.5	79 131
Bombay (37)	T. R.	74 0.1	75 —	79 —	82 —	85 0.5	83 20.8	81 24.7	80 15.1	81 10.8	80 1.8	80 0.5	76 0.1	80 74.4
Karachi (49)	T. R.	65 0.6	68 0.3	76 0.2	80 0.2	85 0.1	87 0.2	84 3.1	82 1.8	82 0.9	80 0.1	72 0.1	67 0.2	77 7.8
Madras (22)	T. R.	76 1.0	77 0.3	81 0.4	85 0.6	87 2.2	88 2.1	86 3.8	85 4.4	84 4.7	81 10.8	78 13.7	76 5.1	82 49.1
Calcutta (21)	T. R.	65 0.4	70 1.0	79 1.3	85 2.3	85 5.6	84 11.8	83 13.0	82 13.9	82 10.0	80 5.4	72 0.6	65 0.3	78 65.6
Bangalore (2981)	T. R.	67 0.2	72 0.1	77 0.6	80 1.3	79 5.0	74 3.2	72 4.0	72 5.9	72 6.3	72 6.4	70 1.9	67 0.7	73 35.6
Secundera- bad (1787)	T. R.	70 0.3	76 0.2	82 0.7	87 0.7	89 1.4	82 3.7	77 6.0	77 5.7	76 5.2	76 3.3	72 0.8	69 0.3	78 28.3
Delhi (718)	T. R.	59 1.0	62 0.5	74 0.7	84 0.4	89 0.7	93 3.4	87 8.5	86 6.9	84 4.5	79 0.5	68 0.1	60 0.4	77 27.6
Lahore (730)	T. R.	54 0.7	59 1.1	69 1.1	81 0.6	88 0.9	93 1.8	89 7.4	88 4.6	85 2.4	77 0.6	64 0.2	55 0.5	75 21.9

1. On the same graph paper draw rainfall curves for Mangalore, Bombay, Karachi. How does the rainfall differ at these places as regards (a) amount, (b) length of rainy period, (c) date of beginning of rainy period? Account for these differences by reference to their position and surroundings.

2. On the same graph paper draw rainfall curves for Mangalore, Bangalore and Madras. Note, and account for, any differences in amount and period of distribution.

3. On the same graph paper draw rainfall curves for Bombay and Secunderabad.

4. On the same graph paper draw rainfall curves for Calcutta, Delhi, Lahore. Explain how and why they differ.

5. "In India the hottest month is that preceding the monsoon." Test this statement by reference to the statistics for each of the above towns.

6. Which town has the smallest temperature range, and which the greatest? Account for this in each case.

Extent and natural divisions. No country in the world is so well demarked by natural features as the Indian peninsula, whose land boundaries and relief bear a strong resemblance, although on a much larger scale, to those of Italy. As Fig. 31 shows, the boundaries of British India now extend beyond the natural frontier on the west and north-west, where also they are outside the influence of the monsoons. The total area of the territory within these boundaries is 1·8 million square miles, or half that of Europe; the population is 315 millions, or three-fourths that of Europe. Of this total area about one million square miles is under the direct rule of the Indian Government; the remainder consists of a number of Native States, ruled over by native princes under British supervision.

The area may be divided into three natural divisions.

1. **Mountainous borderlands.** The western land boundary is a continuous rampart of mountains extending from the Arabian Sea northward to the Pamirs. British Baluchistan lies outside this natural barrier, and is reached by the Bolan Pass. South of the pass the boundary is the Kirthar range, attaining occasionally a height of 6000 ft.; northward the mountains are much higher. The Sulaiman range, ending northward at Safed Koh (12,000 ft.), consists, like the Kirthar range, of several parallel ranges separated by deep, ravine-like valleys. Little moisture falls to help the diurnal

temperature changes in disintegrating the rocks, so that the valleys have steep bare sides and the ranges are thus most difficult to cross. A difficult road—the Gomal Pass, leads through these mountains into Afghanistan. Between the Sulaimans and their loftier extension, the Hindu Kush, runs the Khyber Pass, the only other practical way through the western mountain wall and the road most frequently used both in the present day and in the past. The Hindu Kush links up without a break with the Pamirs, a broad, lofty mountain knot in which all the great mountain systems of Asia seem to originate.

The northern boundary of India is the Himalayan system, the loftiest in the world; in Everest, Godwin Austen, Kinchinjunga and other peaks it reaches a height of over 5 miles. This system consists of parallel snow-clad ranges over 200 miles broad; the Indus, Sutlej, Ganges and Brahmaputra, rising beyond the system, pass through the mass in deep ravines, and must have existed before the mountains were upheaved. Difficult and lofty footpaths—they can scarcely be called passes—afford tortuous entries from the Tibet plateau during the summer months; one emerges in Bhutan, another in Sikkim along the Chumbi valley.

The value as barriers of these frontier mountains lies not only in their great height and in the fewness of the passes, but also in the fact that they are backed by huge deserts—of snow in the north, of sand in the west.

The eastern land boundary of India, although not more than half the height of the Himalayas, is equally effective as a boundary. It consists of parallel ranges trending roughly north and south, and enclosing the deep valleys of the Irawaddi, Salween and their tributaries; as the Tibet plateau is approached, these valleys become terrific ravines.

2. Indo-Gangetic Plain. At the foot of this lofty mountain rim lies a huge plain, 1600 miles by 300 miles, composing the lower basins of the Indus, Ganges and Brahmaputra. Except for the slightly elevated watershed between the two

former rivers, the plain nowhere reaches an altitude of 600 ft., while the greater part is but a few feet above sea-level.

From end to end the soil is of fine alluvium which changes gradually from a marshy condition near the Ganges delta

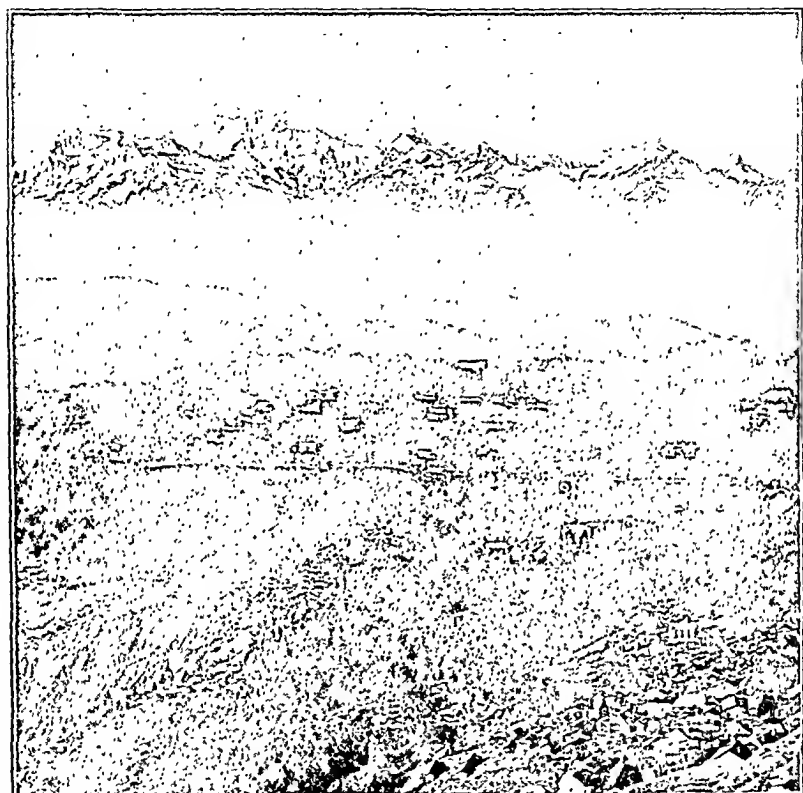


Photo. J. Burlington Smith.

By courtesy of the P & O Steam Navig Co

FIG. 30.—VIEW OF DARJILING—A HILL-STATION ON THE FOOTHILLS OF THE HIMALAYAS.

The Himalayas, snow-clad, can be seen in the background, with foothills between.

to a sandy desert in the basin of the Indus. The soil, which attains a depth of over 600 ft. in the lower Ganges basin, has been brought from the lofty frost-chipped mountain border by the Himalayan streams, and deposited by them in what was then a long strait-like arm of the sea. It is said that one may travel from one end of this area to

the other without encountering a stone the size of a hazel nut.

3. **Peninsular plateau.** The part of India lying south of the Indo-Gangetic plain is a plateau, sloping for the most part gently eastwards. The high western edge is known as the Western Ghats; from a coasting steamer it appears as a long mountain range, reaching a maximum height in the Nilgiri Hills (8760 ft.). The Palghat Gap, or the Gap of Coimbatore, leads at a height of 900 ft. from the western coastal plain to the eastern, and is followed by a railway; south of it are the Anamalai Hills (8850 ft.), known in Travancore as the Cardamoms.

The rivers draining across the plateau have eaten out broad valleys, so that viewed from the coastal plain the eastern plateau edge, known as the Eastern Ghats, appears as a series of low detached heights (1000 ft.). The eastern coastal plain is much broader than the western, and is continually being added to as the silt-laden rivers push out their deltas into the Bay of Bengal. The plateau drained by the east-flowing rivers is called the Deccan.

North of the Deccan the peninsula is drained westward and northward, the Vindhya and Satpura ranges, with their eastward extension the Mahadeo-Rajmahal Hills, mark the southern boundary of this northern upland area, while the Aravallis bound it on the north-west. Between the latter range and the Vindhya is the plateau of Malwa.

Summer climate. The whole of peninsular India lies within the Tropics. The vertical sun is over Ceylon early in April and over the mainland a week later. During March, April and May the heat pours down with increasing power through a cloudless sky, rendering life almost unbearable on the Deccan, the coastal plains are cooled by sea breezes blowing strongly in the afternoon and evening. About the end of May the wealthier classes leave the low-lying towns for the cooler plateau hills. The rains follow about a month or six weeks after the vertical sun, reaching Southern India about the beginning of June and the Ganges valley

by the beginning of August, by which time the rains are well established. The month immediately preceding the monsoon, when dust-storms add to the oppressive conditions, is really the hottest month, as the monsoon brings sheltering clouds.

The interposition of the western edge of the Deccan deflects the monsoon winds upwards and by expansion cools them to precipitation point. This effect is called the "bursting" of the monsoon. Heavy rains fall on the Western Ghats, but the centre of the Deccan, being *lower* and *hotter*, gets a scanty rainfall; thus the Deccan is a rain shadow.

Between the Deccan and the Baluchistan plateau lie the **Thar** desert and the Indus plain. Here the land is low and hot, and the incoming winds are heated rather than cooled: hence desert conditions prevail.

The winds that sweep up the Bay of Bengal deluge the uplands of Burma and Assam; a smaller rainfall ensues on the uplands of the Mahanadi basin. The progress of the winds northwards is stopped by the Himalayas; here the on-coming winds are banked up so that heavy rain falls as far back as the Ganges mouth. Deflected by the Himalayas, the monsoon passes up the Ganges valley, growing gradually warmer and less moist until, in the neighbourhood beyond Delhi, rainfall gradually ceases.

Winter climate. January is the coolest month, but even then the average daily temperature is high. In the Indus and Ganges plains the temperatures are those of the January isotherm map, while over the peninsular plateau the temperature is high enough for such crops as wheat, barley and millets.

The North-East Monsoon (N.E. Trades) blowing from the land to the sea, and from a cool area to a warmer, is not only a dry but a *drying* wind. Little rain falls in India at this season, except in the south-east where the moisture, picked up by the monsoon in its passage across the Bay of Bengal, is deposited. The wet season for the south-east coast and immediate interior is therefore the period of the N.E. monsoon. The maximum rainfall on this coast occurs in October,

November and December ; February, March, April and May, being the months during which the monsoon dies down, are dry all over India.

There are thus three climatic seasons for the western coast :

1. **Hot weather** season from March to May.
2. **Rainy** season from June to September.
3. **Cool** season from October to February.

This seasonal division is true in a less marked way of practically the whole of India, except the south-east corner, which is sheltered from the summer monsoon, but open to the winter monsoon.

The south-east coast has therefore the following climatic seasons :

1. **Hot** season from March to September.
2. **Cool** season from October to February.
3. **Wet** season from October to December.

EXERCISES.

1. Compare the relief and physical features of India and Italy.

2. Describe and account for the weather conditions throughout the year on the west coast of India.

3. Point out in what various ways the Himalaya mountains have influenced the lives of the dwellers in the Ganges basin.

4. Account fully for the Thar desert.

5. The Deccan plateau slopes gradually downwards from the W. Ghats to the E. Ghats. What differences, climatic or otherwise, would you expect to find if the direction of slope were reversed ?

6. Why are the Indus, Ganges and Brahmaputra so heavily laden with silt ?

7. On a sketch map of India shade in the area receiving rain (20 ins.) from the summer monsoon. Also shade (with red ink) the area receiving rain (10 ins.) from the winter monsoon. Show, by arrows, wind direction at each season.

LESSON IX.

1. NATIVE STATES. DEFENCE OF INDIA.

	Total Area. 1000 sq. mls.	Population. Millions.
British India - -	1093	244
Native States - -	709	71

Express diagrammatically the ratios of the area and population of British India to those of the Native States.

2. British troops are landed at Karachi and sent up by rail to Quetta, Chaman, Peshawar, Rawal Pindi. Draw a sketch map of the route from Karachi, and estimate the distance of each station from the port.

3. Why is the possession of the Suez Canal so vital to the defence of India? How many more miles would be added to the sea-journey to India if the Suez Canal were closed?

INDIAN TRADE (MERCHANDISE).

	Imports. £1,000,000.		Exports. £1,000,000.		Total £1,000,000.	
	1914.	1930.	1914.	1930.	1914.	1930.
United Kingdom -	68	99	40	51	108	150
Germany - -	7	12	16	22	23	34
United States -	3	13	12	29	16	42
Japan - - -	3	17	13	26	16	43
Total—all Countries	112	240	161	250	273	490

4. Draw a circle (radius 2 ins.) and divide it into sectors to represent the percentage trade with India of each of the countries in the above table (Fig. 29).

INDIA : TRADE WITH BRITAIN.

Imports.	£ millions.		Exports.	£ millions.	
	1914.	1930.		1914.	1930.
Cottons - - -	34	30	Raw jute -	7	6
Metals (copper, iron, etc.) - - -	7	8	Rice - -	1	1
Machinery - -	3	5	Hides, dressed	3	6
Railway plant -	4	4	Raw cotton -	1	3
Hardware, etc. -	2	9	Linseed -	2	—
Woollens - -	1	1	Cotton seed -	1	1
Other articles -	17	40	Tea - -	7	17
			Wheat - -	7	1
			Wool - -	2	3
Totals - - -	68	99	Totals - -	40	51

5. (a) Divide the exports into (a) raw materials, (b) food.

(b) Summarise the exports that cannot be produced in Britain.

(c) What fraction (roughly) of the imports are cottons? What does this huge import of cottons tell you about (a) the climate, (b) the enterprise of the people?

(d) Point out important changes in India's trade with Britain in the last sixteen years as regards (a) total trade, (b) articles traded.

(e) What raw materials are imported from Britain? Suggest uses to which this raw material is put.

(f) "The products of India are complementary to those of Britain." Do the above trade statistics support this statement?

6. On a large map of India shade in the areas having a population—

(a) More than 400 per sq. mile (cross hatch).

(b) " " 250 " " (horizontal).

(c) " " 200 " " (stipple).

7. State in general terms what physical and other features the densely populated areas have in common.

8. How do the Native States compare with British India as regards (a) density of population, (b) distribution of rainfall?

PROVINCES AND STATES OF INDIA: DENSITY OF POPULATION.

British Province.	Area (1000 sq. m.).	Population (millions).	Population per sq. m.	Native State.	Area (1000 sq. m.).	Population (millions).	Population per sq. m.
Assam - - -	53	7	127	Manipur - - -	9	—	41
Baluchistan - - -	54	—	8	Baluchistan States - - -	80	—	5
Bengal - - -	79	45	578	Baroda - - -	8	2	248
Bihar - - -	43	24	561	Bengal States - - -	5	1	153
and Orissa - - -	14	5	373	Bihar and Orissa States - - -	29	4	138
Orissa - - -	27	6	207	Bombay States - - -	64	7	116
Bombay - - -	76	16	212	Central India - - -	77	9	121
Presidency { Sind - - -	47	3	75	Central Provinces - - -	—	—	—
Burma - - -	231	12	52	States - - -	31	2	68
Central Provinces { Central - - -	—	—	—	Hyderabad - - -	83	13	162
and Pro- - -	—	—	—	Kashmir - - -	84	3	37
Berar - - -	82	11	132	Madras { Cochin - - -	1	1	675
Coorg - - -	18	3	172	States { Travancore - - -	7	3	452
Madras - - -	2	—	111	Mysore - - -	30	6	197
N.W. Frontier Province - - -	142	41	291	N.W. Frontier (Tribal - - -	—	—	—
Punjab - - -	13	2	164	Areas and Agencies) - - -	26	2	64
United - - -	100	20	200	Punjab - - -	37	4	115
Provinces { Agra - - -	83	35	417	Rajputana - - -	129	10	82
Provinces { Oudh - - -	24	13	520	Sikkim - - -	3	—	31
Provinces { Oudh - - -	—	—	—	U. Provinces States - - -	5	1	164
Total, British India - - -	1093	244	223	Total, Native States - - -	710	71	100

British conquest of India. The first Europeans to establish a footing in India were the Portuguese, whose trading-station, Bombay, was subsequently given by them to the English king Charles II. as part of the dowry of his Portuguese bride. The first appearance in India of the British was in 1600, when the British East India Company established a "factory" or trading-station at Surat, supplanted eight years later by that at Bombay, which was handed over to the Company by the king. Other factories were established at Fort St. George and Fort William, on the sites of the present towns of Madras and Calcutta. The French, meanwhile, had established a factory at Pondicherry, and, by interfering in the quarrels of the neighbouring princes, had succeeded in obtaining the ascendancy over the whole of the Carnatic, as the populous coastal plain from the Kistna river to Cape Comorin was called.

It is very probable that the East India Company would have been driven out of India altogether by the French, had not they also interested themselves in the quarrels of the native princes. In 1750, as native troops led by the French were besieging Trichinopoly, held by the British, Robert Clive, afterwards Lord Clive, a clerk in the service of the East India Company, led a small native force against Arcot, the capital of the Carnatic. This move relieved the siege of Trichinopoly and won for the British the whole of the Carnatic.

The next part of India to fall into British hands was the province of Bengal, ruled over at that time by Suraja Dowlah, whose capital was at Murshidabad. This ruler attacked the British factory at Fort William and 146 people were imprisoned by his guards in the famous Black Hole of Calcutta. Clive was sent with a small force—mostly natives, to punish him, and at Plassey (1757), Suraja Dowlah and his French allies were defeated. Thus Bengal fell into the hands of the East India Company. From Bengal, British influence spread up the Ganges valley, until, with the exception of Oudh, the whole area from Delhi to Calcutta was under the control of the Company.

At the time of the formation of the East India Company the whole of India was under the sway of the **Great Mogul**, who ruled from Delhi. The Moguls were Mongols, from Central Asia. By 1750 they had lost grip of their representatives in distant parts of India, who set up as princes on their own account. As we have seen, it was with some of these princes that the East India Company came into conflict in Madras, Bengal and Bombay.

With the fall of Mogul power, their immediate Hindu neighbours, the Sikhs, grew in strength, and before long were at grips with the Company. After a stern struggle the Sikhs were overcome, and, since that time, have been staunch and trusty subjects.

Another severe war had to be waged before French influence was finally destroyed in India. This was against the **Mahratas**, and had for its arena the plateau lands behind Bombay. The Mahratas were defeated and part of their territory annexed to Bombay. Many of the Mahrata princes were allowed to retain possession of their territories; the **Central Provinces**, however, came under British rule.

A few years later (1857) the terrible mutiny of Bengal Sepoys broke out at Meerut, near Delhi, and, when peace had been again restored, the British Government decided that the Indian territories were too vast for the Company to control, and they formally took them over.

Native States. The Indian Empire is made up of British territory and Native States. The latter are outside the direct jurisdiction of the Crown, although they all acknowledge Britain as their suzerain. A British official, called a **Resident** or Commissioner, resides in each State, to advise the prince when required.

The **chief conditions** imposed upon the States, and mentioned below, are directed mainly towards securing the safety of British India from both internal and external attack; in internal affairs there is little interference. The obligations applying to all the Native States may be summarised as follows :

(a) Native princes must conduct all foreign business through the Resident, must govern without harshness, must not keep an unduly large army, and must assist the King in times of grave Imperial danger.

(b) The British Government undertakes to protect the States, and to secure fair treatment for the subjects.

The Native States may be divided into two groups—internal and external. The **internal group**, of which Rajputana and Hyderabad are the chief, are much the more important economically. They include three-quarters of the total area of the Native States, and contain nine-tenths of the population. Their relations with the British Government have always been of a cordial nature. The **external group**, although very thinly populated, are of great interest on account of their strategic importance. They include Baluchistan, and the mountainous western borderland lying between Afghanistan and the Indus plain. The importance of this mountain border as a line of defence made it necessary to interfere in its internal affairs and to secure, if possible, the support of its wild inhabitants. Moreover, it was imperative to take steps to prevent the recurrence of raids from these hills upon the Punjab. Having few laws of their own, these hill-men have shown scant regard for those of the Indian Government, and, from time to time, have openly flouted the latter authority.

Defence of India. India is a possession of great value to the Empire, but especially to Britain, and its loss would have disastrous commercial consequences. Its great value lies chiefly in the fact that *its products are complementary to our own*. It supplies such raw materials as cotton and jute for our factories, and wheat, rice and tea for our tables, while, on the other hand, its 300 millions of people are an **extensive market** for the manufactures of Lancashire, Yorkshire and the Midlands.

But, so far, there are few British people in India, due partly to the presence there already of a large native population, partly to the abundance of unsettled land in the other

colonies, and largely to the unsuitability of the climate to Europeans. Envious eyes have been cast by European powers on India, and the pressing problem of defence has engaged the attention of the Indian Government for many years. The defence of India has taken three directions: (i) the establishment of a large native army, (ii) the building

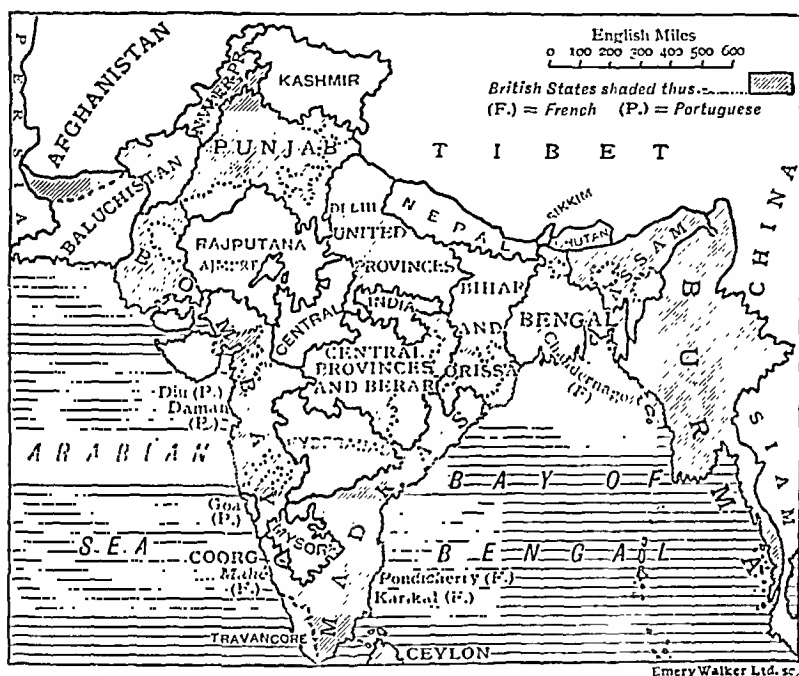


FIG. 31.—INDIA: BRITISH TERRITORY AND NATIVE STATES.

of strategic railways to likely points of attack, and (iii) the construction of defence works.

So long as Britain remains mistress of the seas the invasion of India must be by land, and in particular, by one or other of the passes in the north-west and north. On that side lie Europe and the powers to be guarded against. Examine Fig. 20, showing the north-west frontier and the areas immediately beyond. An army invading India must enter by either the Khyber or the Bolan pass (Lessons 6, 11). If by the former, the approach is most difficult, as the Bamian pass

over the Hindu Kush has first to be negotiated; if by the latter, the way is over 300 miles of very arduous semi-desert country lying east of the Seistan oasis. Powerful forts at Chaman and Quetta, connected by rail with the Indus valley, guard this route.

Beyond Seistan is the feeble country of Persia, unlikely to offer effective resistance to the advance of a strong European power. As a strong power in Eastern Persia would be a serious menace, Britain has declared south-eastern Persia to be a British sphere of influence. Afghanistan, though independent, and Baluchistan, are both under British influence; an invasion of either would be an act of war against Britain. The distribution of the Indian army at Rawal Pindi, etc., assures the presence near, in the Indus basin, of a strong force ready to strike at either Quetta or Peshawar.

EXERCISES.

1. Explain as fully and as clearly as you can why the possession of India is so important to Britain.
2. Contrast the importance of the internal and external native states.
3. Give an account of the various steps by which Britain established her position in India.
4. Illustrate by a sketch map the defences of India along the N.W. frontier.
5. Draw a sketch map of India and insert the names of the towns connected with the British conquest.

LESSON X.

INDIA: RACES AND RELIGIONS.

People. Of the 315 millions of people inhabiting India, only $1\frac{1}{2}$ millions are British or English speaking. A study of the remainder leads to their division into the following races.

1. **Aborigines.** These are the Bhils, Kols, etc., found scattered about Central India in forested hills or dark jungles, whither they were driven by subsequent invaders. They are short, dark, sturdy men, and show many points of resemblance to the peoples of the Tibet plateau.
2. **Dravidians.** The Dravidians probably entered India by the Bolan Pass, or by the shore of the Arabian Sea, for

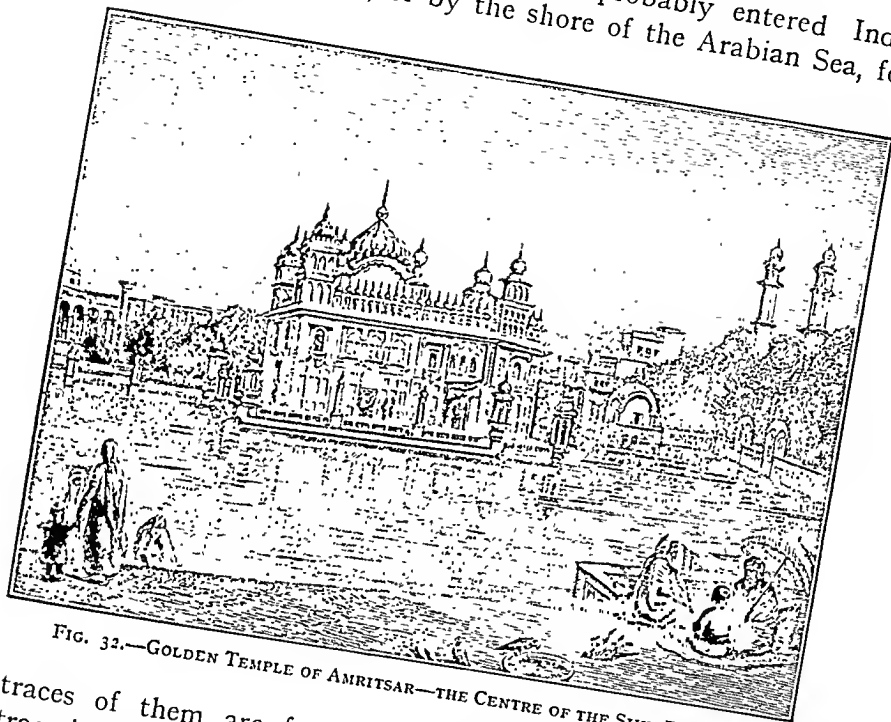


FIG. 32.—GOLDEN TEMPLE OF AMRITSAR—THE CENTRE OF THE SIKH RELIGION.

traces of them are found in Baluchistan. They left no trace in either the Indus or Ganges valley, but passed on to the peninsula, where their descendants are to be found to-day occupying the greater part of India south of the Mahanadi delta. They are negro-like in appearance.

The chief tribes are the **Tamils** and **Telegus**, much smaller men than the Rajputs and Sikhs, and now much less warlike. Both characteristics are probably due to their *rice diet* and easy agricultural conditions, as compared with the *wheat diet* and uncertain climate of north-west India. Many Tamils

are employed on the rubber and tea estates of Ceylon and Southern India, where they make cheap and efficient coolies.

3. Aryans. Following the Dravidians from western Asia came the Aryans, a race of fair-skinned men, who entered by the Khyber Pass and settled in the Indus and Ganges valleys. Their original home was the Iranian plateau; they were a branch of the same virile race which from time to time invaded Europe long before written history, and were the forefathers of most of the Europeans of to-day.

The most noteworthy of the Aryan tribes in India are the Rajputs who inhabit the desert and desert fringes of Rajputana and Sind. Tall, brave and hardy, these men differ from Europeans chiefly in their darker colouring, due to the effect of the hot climate. They are intensely proud of their descent, and, being warriors by instinct, form a good percentage of our native troops. Smaller groups are found in the Himalayan slopes, but few on the Deccan. Their religion is Hinduism.

Another notable Aryan tribe is the Jats, of whom the Sikhs are the best known branch. Like the Rajputs they are tall, well set-up warriors, and inhabit the plains of the middle Indus. Their religion is a purified form of Hinduism, and has its centre at Amritsar.

But by far the most numerous of the Aryan races is the Bengali, found in greatest numbers in western Bengal. He is the antithesis of the Rajput and Sikh, being neither warlike nor of striking physique.

4. Mongols. A widely different race from either the Aryans or the Dravidians, pushed its way into Burma from the central plateau of Tibet and western China. These are Mongols—yellow-men, allied in blood, language and religion to the Tibetans, Chinese and Japanese. Their religion is Buddhism.

—Religions. The number of mosques and temples in India and their ornate and sumptuous character afford abundant testimony to the highly religious nature of the people. Indeed, it is very difficult for anyone who has not lived in India to realise the extent to which religion enters into the

daily life of the Indian, and how widely it affects his social relations. The result is seen in his kindly nature and gentle disposition towards both man and beast, and in his courtesy to strangers. Unquestioned faith in the teachings of religious leaders has, perhaps, retarded somewhat the growth of initiative, and of a genius for local self government.

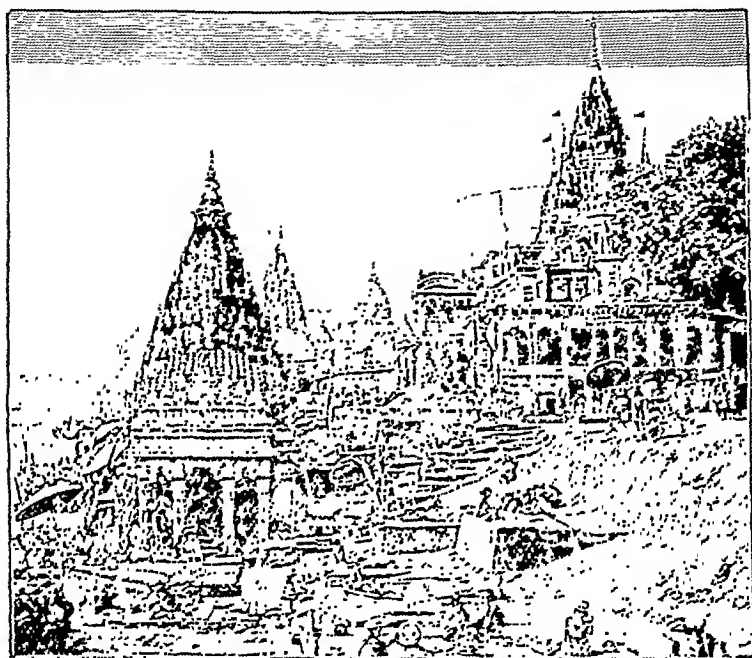


FIG. 33.—BENARES—A CITY OF GHATS AND TEMPLES.

Of the many forms of religion, three, Hinduism or Brahmanism, Mohammedanism and Buddhism, claim 95 per cent. of the people.

Hinduism or Brahmanism. This is the religion of 70 per cent. of the people; it was the religion of the Aryans who brought it into India 2000 years before Christ. It is essentially a spiritual religion. There is one Supreme God (Brahman) having the threefold character of creator, preserver and destroyer. His soul pervades every created thing; from Him issues man's soul, and to Him it will eventually return. All natural phenomena are held to be manifestations

of His divine power, and to many—such as rivers, winds, etc.—which touch intimately the lives of the people, homage and reverence are given.

Perhaps the object of most special worship is the river Ganges, the giver of food and, therefore, of life. Every Hindu endeavours to make at least one pilgrimage in his life-time to its banks, to drink its sacred waters, and bathe in its purifying stream. To have one's ashes borne away on the river is to achieve immortality. Certain cities on the Ganges are held to be sacred. Benares and Patna, connected with the life of Buddha, and Allahabad, at the junction of the Ganges and Jumna, are visited annually by over a million pilgrims.

Society in India was originally divided, according to tradition, into four classes or castes, viz. priests, warriors, merchants and labourers. The Brahmins, or priests, occupied the first place. Each of these castes gradually split into innumerable other castes, corresponding largely to different occupations and trades (cf. the City Guilds). Anyone not belonging to any caste was a pariah or out-caste, and held in contempt by all. Each caste had a distinctive mark, and intermarriage and social intercourse between the castes were forbidden, under penalty of losing caste.

The caste system is slowly breaking down under British rule, for the establishment of railways, post offices, schools and other public services has compelled freer intercourse.

Buddhism. This religion was evolved from Hinduism by Gautama, a prince of the warrior class, who was styled the Buddha, *i.e.* the "Enlightened one." It was an attempt to abolish sacrifices to gods, and to substitute a life of spiritual effort; kindness to animals was rigidly enforced.

Buddhism has few followers now in India Proper, but it is the universal religion in Burma, where its effects are seen in the subdued and kindly nature of the inhabitants.

Mohammedanism. This, the last of the three prevailing religions to take root in India before the entry of the British, had its origin in Arabia (p. 25). It was brought into India by Arab invaders, and established in the neighbourhood of

Delhi, and there are to-day in that region and Eastern Bengal over 60 millions who profess that faith.

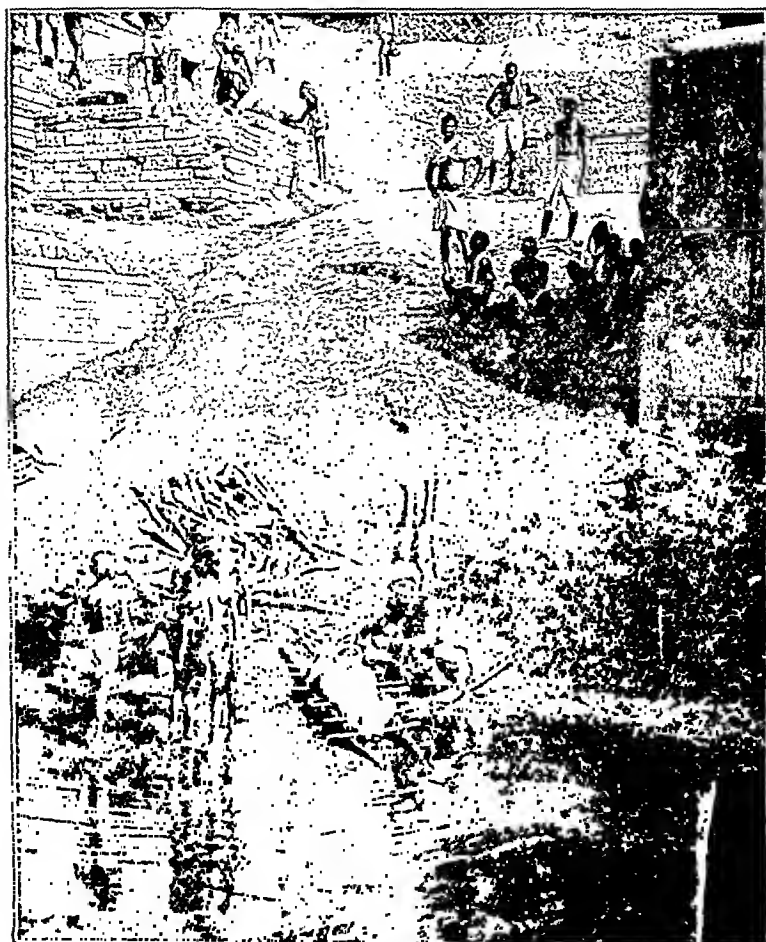


Photo. J. Burlington Smith

By courtesy of the P & O Navig. Co

FIG. 34.—A BURNING GHAT, BENARES.

The man in the foreground has brought the dead body of his friend down to the water edge. After immersion the body will be burnt on the prepared pyre and the ashes thrown into the river.

EXERCISES.

1. State what you know about the Sikhs, Rajputs and Tamils.
2. What is the caste system? What institutions are gradually breaking it down, and why?

3. In which part of the Indian Empire are Buddhists found? Say what you know about their religion.

LESSON XI.

PROVINCES OF THE NORTH-WEST AND NORTHERN FRONTIER.

TEMPERATURES AT SRINAGAR AND LEH.

	Altitude. Feet.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.
Srinagar -	5,200	33	35	46	57	65	71	75	73	66	55	46	38
Leh -	11,500	19	21	32	44	50	59	64	63	60	44	34	24

1. (a) Draw temperature curves for each of the above places (on same paper).

(b) For how many months is there continuous frost at each place?

FRONTIER TRADE.

EXPORTS TO

IMPORTS FROM

	£10,000.	Chief Articles.	£10,000.	Chief Articles.
Afghanistan	133	Cottons, leather, tea.	85	Raw wool (57 %), fruit.
Dir, Swat -	60	Cottons and cotton yarn (68 %).	55	Grains.
Central Asia	7	Cottons and manufactured silk.	5	Borax, raw silk.
Persia -	14	Cottons, leather, tea.	2	Silk.
Nepal -	141	Cottons (57 %), metals and manufactures.	296	Rice (37 %), cattle, jute.
Sikkim -	10	Cottons.	15	Animals, fruit.
Tibet -	11	Cottons.	19	Raw wool (67 %).
Bhutan -	10	Silk.	12	Manufd. wool.
Total -	386	(Nepal 38 %, Afghanistan 28 %).	489	(Nepal 59 %, Afghanistan 17 %)

2. (a) By what routes would the above goods enter Afghanistan, Swat, Leh (for Central Asia), Persia?

(b) What kind of baggage animals would be used in each case (including across Tibet)?

(c) Comment on the imports as regards (a) nature, (b) value in proportion to weight.

(d) To which of the following classes, speaking broadly, would you assign (a) the imports, (b) the exports of the above table: food, raw materials, manufactured articles? Draw a conclusion.

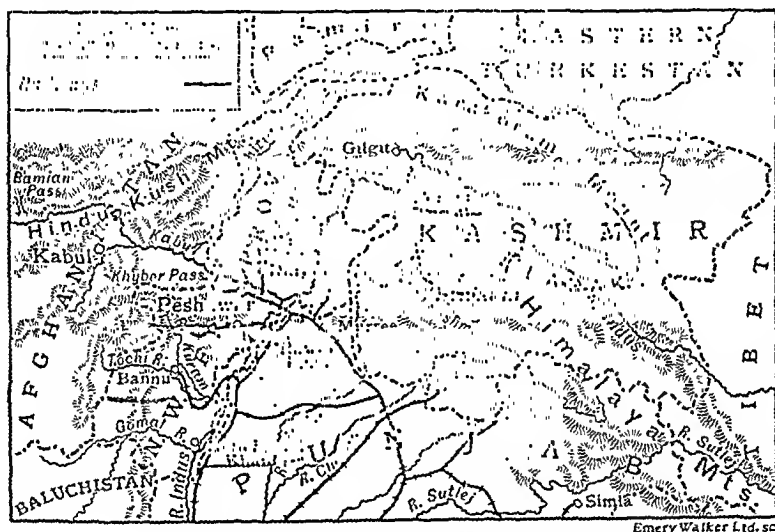


FIG. 35.—KASHMIR AND N.W. FRONTIER PROVINCE.

3. How would travellers from Delhi reach Srinagar? Estimate the distance.

4. Rawal Pindi and Jammu are military stations. Suggest reasons (see also Fig. 20).

Kashmir. This native state, lying wholly within the Himalayas, forms one of the outposts of India in the north-west. It is traversed from end to end by many lofty parallel ranges, which, viewed from the remarkably low-lying valleys, present everywhere a magnificent spectacle. Nanga Parbat (26,600) and Mount Godwin Austin (28,300) stand 23,000 ft. above the adjoining Indus valley.

The population of 3 millions is mostly centred in the beautiful broad valley of the Jhelam and its tributary the Sind. This is the famous Vale of Kashmir, so renowned for the beauty of its climate and scenery and for the fertility of its soil. Situated 5000 ft. above sea-level, this valley—120 miles by 20 miles—occupies the bed of an old lake into which the Jhelam at one time brought its waters and its mud, until, the mountain dam giving way, the lake emptied, leaving the Wular Lake, and an enormous deposit of rich alluvial soil. The sides of the vale are terraced, and numerous irrigation canals lead from the Jhelam. Temperate fruits and cereals are produced.

Standing on, or rather *in*, the river is the capital Srinagar, the Asiatic Venice, famous for its metal work and beautiful silk shawls. A military road leads from Rawal Pindi to Srinagar and thence to Gilgit, an outpost against troublesome hill tribes; another road leads over a high pass, the Zoji La, to Leh, on the Indus, in the Buddhist dependency Ladak. Leh is a busy fair town in the summer, when its bazaars are filled with brick-tea and costly silks.

Besides the importance which its position on the frontier gives it, Kashmir is chiefly of interest as being the only place in India really suited to habitation by Europeans. It has long been a drawback to British administration in India that the climate prevents many officials from taking with them their wives and children, but now that Delhi has become the seat of government, the proximity of the vale of Kashmir may help to improve matters.

North-West Frontier Province. The whole of the mountainous border from the Karakorams southward to the Arabian Sea is inhabited by fanatical tribes, various branches of the Pathans, whose plundering instincts have been a continuous source of trouble and anxiety to the Indian Government. In order the more effectually to safeguard the Punjab plain, a new province called the North-West Frontier Province has recently been formed, taking in all the area beyond the Indus, from the Gilgit valley southward

to about lat. 31° , and westward to the Afghanistan frontier. Only the low-lying strip, however,—*Derajat*—taken from the Punjab province, is directly under British rule; the mountainous remainder, forming a sort of buffer state between India Proper and Afghanistan, is under the rule of various Pathan chieftains (Fig. 20).

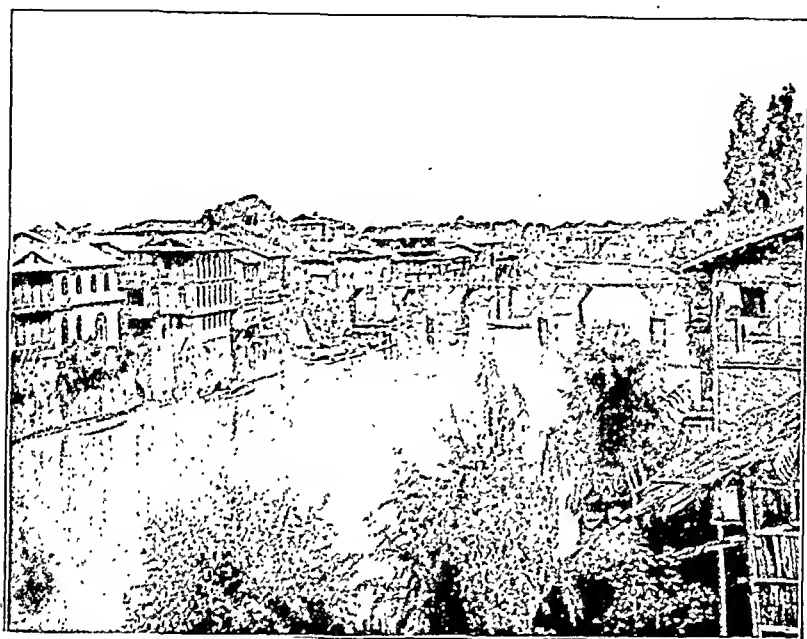


FIG. 36.—SRINAGAR, THE ASIATIC VENICE.

Many roofs of this city are covered with beautiful flowers. Note roof on right of picture.

Strategic railways. The mouths of the valleys debouching from the mountains are held by strong forts: the Gomal by *Dera Ismail Khan*, the Tochi by *Bannu*, the Kuram by *Kohat* and *Thal*, and the Kabul by *Peshawar* (Figs. 20, 35). All these forts are connected by single, narrow-gauge branch lines to a strategic railway from Karachi, the nearest port to Britain. This railway (N.W.R.) terminates northward at *Jamrud*, a few miles beyond *Peshawar*, after sending out a branch to *Dargai*; from this point access is gained, by the *Malakand Pass*, to the

Swat and Chitral valleys, the inhabitants of which have given considerable trouble in recent years.

Khyber Pass. This, the most famous of all the passes, consists of 33 miles of ravine between Jamrud and Dakka. Starting at the former town, 4 miles from Peshawar and 12 miles south of the Kabul river, the pass rises 1780 ft. to Landi Kotal, where British territory ends, and descends thence to its terminus at Dakka on the Kabul river. Its width varies from 150 yards at Jamrud to 40 ft. at the fortress of Ali Masjid, while at one place it narrows to 10 ft. ;

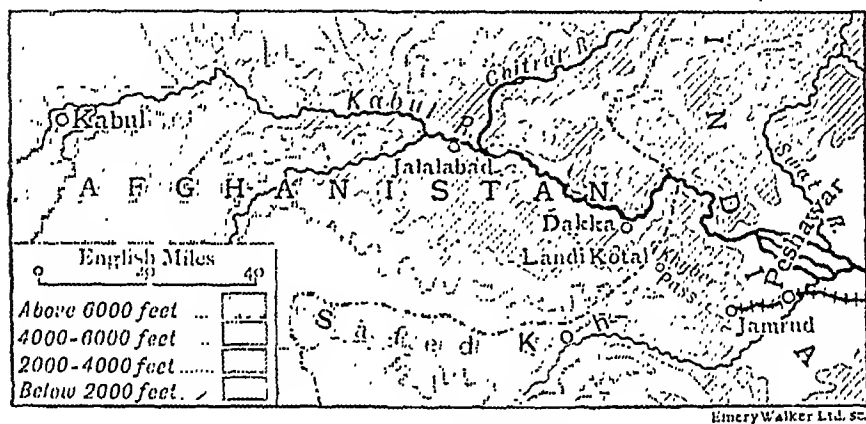


FIG. 37.—KHYBER PASS.

its sides are everywhere steep. A good military road traverses the pass, and is continued along the Kabul river to Kabul. Peshawar is a busy trading centre, and strongly fortified. A motor service connects it with Kabul.

Products. Wheat, rice and millets are grown on irrigated plots round the forts of Derajat and round Peshawar. At Kohat are extensive salt mines of great antiquity; the salt is mined in slabs and conveyed by camel and mule into Afghanistan and over the Indo-Gangetic basin. In this vegetarian land salt is consumed in large quantities.

Himalayas. The value of the Himalayas as a barrier has already been explained (p. 60). The vegetation of the slopes varies from base to summit through diminution in temperature, and from east to west through diminution

in rainfall. In Assam, at the foot, the vegetation is dense and tropical, bamboos and tree ferns predominating; while in the United Provinces and the Punjab, the trees are of the temperate variety and much less profuse.

Separated from the Ganges plain by the last and lowest of the foothills, there stretches a 500 mile strip of wet jungle known as the Tarai (Fig. 43). It forms, from the Siwaliks eastward, a divide between British India and Nepal, in the latter of which it is mostly situated. Watered by countless springs, this marshy, densely clothed jungle is the home of wild beasts. Only natives, apparently immune to the effects of mosquito bites, dare enter this malaria-infested swamp; even they move away to higher ground in the autumn when mosquitoes multiply in the decaying vegetation.

The gradient of the Himalayan slopes is steep: to the top of Mt. Everest, 50 miles from the plain, it averages 1 in 10. Goods are carried up the slopes by ponies, yaks, goats and even sheep; through the passes human portage is largely employed.

The mass of the Himalayan system has benefited the Ganges basin in three ways:

1. It has diverted the S.W. Monsoon up the valley, so that rain falls as far inland as Delhi; while its interposition before the incoming monsoon produces the heavy rainfall of the lower basin.

2. Its elevated, frost-weathered mass helps to provide the material for the silt of the paddy fields.

3. The shock of invasion has had to be borne by the dwellers of the Indus plain.

Nepal. The western half of the Himalayan slope constitutes the independent state of Nepal. It is divided naturally into five longitudinal terraces with intervening valleys, the lowest valley being occupied by the Tarai. As in Kashmir, the population is largely centred in one valley, having a fertile well-watered soil and a delightful climate; Katmandu, the capital, is situated in this valley.

The natives are of Mongol stock, with a characteristic

dislike of foreigners. The ruling class—the **Ghurkas**—are of Rajput origin; they are very largely recruited into the Indian army, as they make efficient and active soldiers.

Little is really known of Nepal, as trade is almost entirely conducted on the Tarai frontier. The chief exports are jute and cereals (chiefly rice).

Bhutan. Little is known of this small independent mountain state. The people are largely of Tibetan stock. There are valuable and extensive forests and much mineral wealth—all undeveloped. **Punakha**, a place of great natural strength, is the chief town.

EXERCISES.

1. Point out the various ways in which Kashmir is, and may become, of importance to the British.

2. Write notes on (a) The Tarai, (b) The Khyber Pass.

3. Who are (a) the Ghurkas, (b) the Pathans?

4. Write a short note on the Himalayas, with special reference to their influence on India.

5. Draw a large scale map of the N.W. and N. frontier to illustrate the frontier trade (p. 78). Show (i) passes, (ii) routes taken by goods, (iii) nature of goods.

LESSON XII. THE INDUS BASIN.

AREA UNDER IRRIGATION (100,000 acres)

	Total Area Cropped.	Canals.		By Tanks.	By Wells.	Other Sources	Wheat Irri- gated.	Total Irri- gated.
		Govt.	Private					
Bengal -	296	1	—	—	—	—	—	—
Bihar and Orissa -	326	9	2	8	—	10	—	21
Assam -	63	—	5	10	7	13	—	44
United Prov. (Agra)	305	25	1	—	—	2	3	4
" (Oudh)	115	—	—	1	—	12	26	81
Punjab -	274	70	—	—	44	6	10	25
N.W. Frontier -	27	2	5	—	18	2	46	114
Upper Burma -	55	5	2	2	1	1	3	9
Lower Burma -	91	—	—	—	—	1	1	9
Central Provinces -	191	—	—	8	—	—	—	1
Berar -	70	—	—	—	1	—	—	9
Madras -	387	36	—	—	—	—	—	9
Bombay -	261	2	2	31	16	9	1	99
Sind -	45	30	1	—	5	1	2	10
					3	4		33

1. Name the three provinces in which irrigation works are most extensive. State the nature of the works in each case, and account for the fact that in the Punjab they are mostly government canals.
2. With regard to Sind estimate what percentage of the total cropped area is due to irrigation. Why is it so high? Why are there no tanks in Sind?
3. (a) Why are there so few wells in Assam and Lower Burma?
(b) Why are there so few tanks in Assam and Oudh?
(c) Why are there so few canals in Bengal, Oudh and Lower Burma?
(d) Why are there so many wells in Agra?

CROP STATISTICS (100,000 acres).

	Rice.	Wheat.	Millets.	Maize	Total Food Grains and Pulses.	Oil-seeds.	Cane Sugar.	Cotton.	Area Cropped more than once.
Bengal - - -	205	1	—	1	222	18	2	—	45
Bihar and Orissa -	162	13	12	17	278	21	3	1	59
Assam - - -	48	—	—	—	48	3	—	—	5
United Prov. (Agra)	40	50	37	13	250	7	12	12	44
„ (Oudh)	22	20	8	8	104	2	2	1	19
Punjab - - -	8	86	31	11	200	11	4	16	31
N.W. Frontier -	—	10	3	4	23	1	—	1	4
Upper Burma -	21	—	8	2	32	13	—	2	5
Lower Burma -	83	—	—	—	83	1	—	—	—
Central Provinces -	50	31	17	1	148	23	—	14	13
Berar - - -	—	3	24	—	34	2	—	32	—
Madras - - -	107	—	115	1	300	30	1	25	42
Bombay - - -	19	13	127	2	196	10	1	40	7
Sind - - -	11	5	18	—	37	4	—	6	6
Total -									

4. (a) Why does Sind grow more rice than the Punjab?

(b) What percentage of the cropped area in the Punjab is cropped twice? Account for this. Name the two chief crops of the Punjab.

(c) What are the natural features of the two provinces producing most rice?

EXPORTS FROM CERTAIN PROVINCES.
(in million rupees).

	Bengal.		Bombay.		Sind.		Burma.		Madras.	
	1914.	1930.	1914.	1930.	1914.	1930.	1914.	1930.	1914.	1930.
Rice -	13	24	5	4	7	8	90	258	40	18
Wheat	6	15	10	5	68	5	—	—	—	—
Cotton	11	4	201	435	16	157	3	10	17	45
Jute -	155	271	—	—	—	—	—	—	1	1
Tea -	173	217	9	1	—	—	—	—	17	42

5. (a) Name the ports for each of the provinces in the preceding table.

(b) Karachi is in Sind. What are its exports? Whence will they have come?

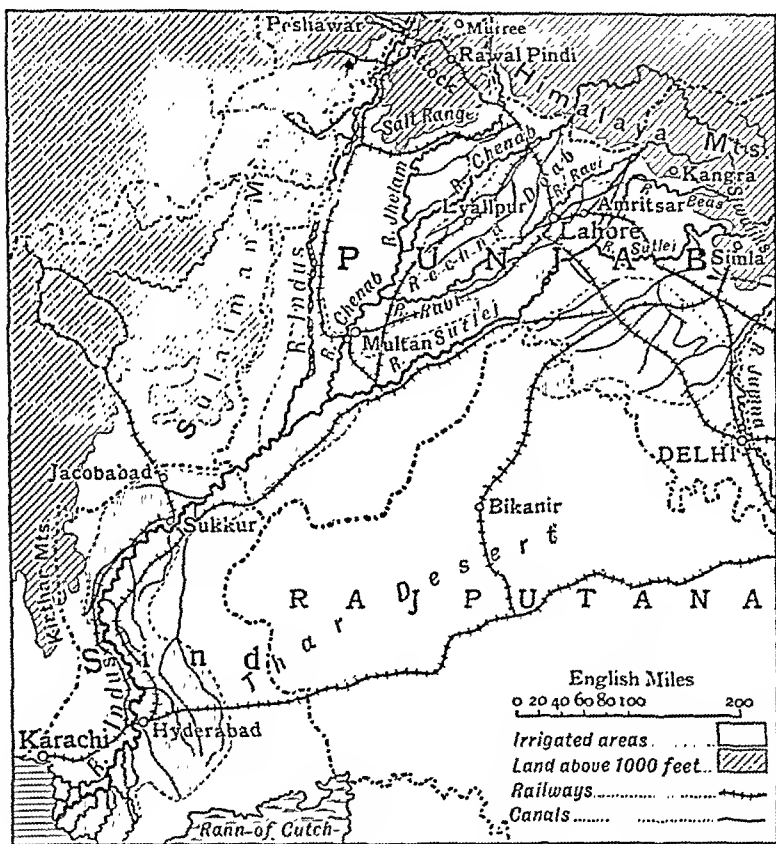


FIG. 38.—INDUS BASIN. (Note key.)

(c) Confirm your answer by reference to the crop statistics on p. 86.

(d) Name any products in the above table not grown mainly in the province named.

The Indus. The Indus rises in the snows of the Tibet plateau. Its course for the first 500 miles is north-westward through a ravine of remarkable depth and between mountain

ranges whose height and grandeur are unsurpassed. Until it emerges from the mountains just above Attock, the river is at all times a raging, ungovernable torrent, having dropped 10,000 ft. in 500 miles. At Attock the river is only 1000 ft. above sea-level, so that thence to its mouth, a distance of 1000 miles, its speed is normal. On the left bank the Indus is swelled in its middle course by the inflow of the united waters of four large glacier-fed rivers: Sutlej, Ravi, Chenab and Jhelam. At Hyderabad the delta begins and the river sends off numerous distributaries; its mouth, at one time, was in the Rann of Cutch.

The permanent source of the waters of the river and its tributaries is the melting snows and glaciers of the Himalayas and western border ranges, and these are considerably augmented by the summer monsoon, just when the glacier water is a maximum. Thus about August the river and its tributaries burst the banks of the many channels into which each splits in the Punjab and flood the country for miles. During winter and spring the rivers are low in their middle course; and useless for navigation and natural irrigation. The latter disadvantage is being overcome by extensive irrigation works. From Sukkur to the sea the level of the river is above that of the surrounding land.

The Indus and its tributaries are shifting their beds westward. The large towns are on the left bank, from which they are now some miles distant, e.g. Multan 7 miles, Lahore 2 miles, Hyderabad 7 miles.

Comparison with the Nile. From its junction with the Chenab, the Indus bears a strong resemblance to the lower Nile. It receives practically no tributary waters; it is swollen annually by waters that fall far from its lower course; the land through which it flows is saved from utter desert conditions only by annual floods and irrigation works; its deltaic course is through malaria-stricken lagoons and marshes. Karachi may be compared with Alexandria, being built so that the prevailing ocean current sweeps the river mud *away from* its harbour; Hyderabad may be com-

pared with Cairo. The deltas are equal in area and have a sea frontage of 120 miles. The Indus differs from the Nile, however, in being navigable by vessels of light draughts for only a short distance, and in its habit of shifting its bed.



By courtesy of the Director of the Imperial Institute

FIG. 39.—A FIELD OF RAGI MILLET—ONE OF THE CHIEF FOODS OF INDIA.

The Punjab. The modern Punjab province extends far beyond the boundary of the five rivers from which it originally took its name. The Indus still marks the western limit except in the extreme south-west, but the eastern frontier

has shifted to the Jumna. The Punjab may be divided into three natural divisions. In the extreme north an elevated mountain tract, intersected by deep broad valleys, marks the frontier; the southern limit of this upland area is the Salt Range. Several well-known hill-stations, as, *e.g.* Rawal Pindi, Murree, Simla are in this tract, and the population in the mountain valleys is considerable—especially in that of the Beas, containing the famous tea-gardens round Kangra. The rest of the Punjab is an alluvial plain which may be divided into two widely dissimilar tracts by a meridian through Lahore; the eastern, and more elevated portion, receives a slight, uncertain rainfall from the dying summer monsoon; the western, lying little above sea-level, is almost rainless.

Climate and products. The heat of the Punjab is very great in April, May and June; in winter the temperature ranges from 58° F. to 68° F. over the bulk of the province. Thus rice and maize are summer crops and wheat a winter crop; millet, the staple food, can be grown at all seasons. There are altogether eight months (September to April) when the climate is temperate, and this fact makes the upper Punjab of increasing importance to the British.

Canal colonies and famine areas. The people of India live on the produce of their own country, and the supreme control of this, and therefore of the people's lives, is moisture; should this fail, famine and misery ensue. Areas like the eastern Punjab, lying on the margin of the normal monsoon, receive, in some years, no rain at all, and have to be assisted by Government to tide over the famine period. The Government relief works consist of railways to bring up food, and of perennial and inundation canals—undertakings which involve the expenditure of very large sums of money and require great engineering skill. It is very doubtful if British rule has been more fruitful of good to the people of India in any other direction than this, for such schemes are not possible of accomplishment except in highly organised States.

With its snow-fed rivers and level plains, the Punjab

offers every facility for irrigation. Every river except the Beas supplies inundation canals, and there is a natural tendency for people to migrate to their banks and form what are called Canal Colonies. A huge canal taken out of the Sutlej near Simla irrigates a large part of the famine area of the eastern Punjab as far as Patiala. Another canal runs to the Beas past Amritsar.

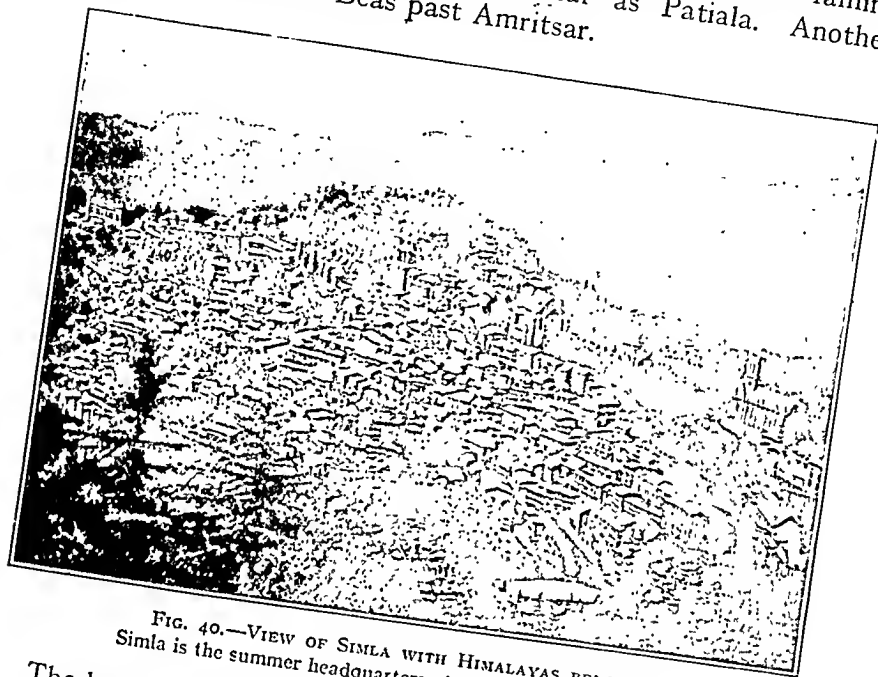


FIG. 40.—VIEW OF SIMLA WITH HIMALAYAS BEYOND.
Simla is the summer headquarters of the Indian Government.

The largest colony, in the Rechna Doab between the Chenab and Ravi, had a population of 70,000 in 1892; twenty years later it had grown to over a million, while the export of wheat in the latter year from the Lyallpur district alone was 150,000 tons. Extensive canal schemes are on foot to bring larger areas under cultivation, so that the Punjab promises soon to be converted from a dry sandy waste to one of the wheat granaries of the world.

Towns. The situation of the Punjab just where the Khyber Pass debouches on to the great plain of India made it the cock-pit of the east. Here, again and again, was

fought out many a terrible death struggle, as each new band of invaders attempted to settle or to pass through. **Delhi** (233), on the right bank of the Jumna, standing midway between the Himalayas and the Thar desert, blocked the way of all invaders heading for the Ganges basin. No city in India has seen so much bloodshed, and the ruins of ten former Delhis lie round about. Various conquerors from the west made Delhi their capital, and it was the capital of the Moguls until their overthrow by the British in the days of Clive. The present city was built by Shah Jehan in the seventeenth century, who adorned it by many fine buildings, notably the great mosque, the Jama Masjid. Delhi now manufactures fine cottons, such as muslins, jewellery and metal goods. There are also flour and sugar mills.

In 1911 the seat of the Indian Government was removed from Calcutta to Delhi, which thus became once more the capital of the whole of India. The province of **Delhi** (557 sq. miles) was created in 1912, and a new city of Delhi is to be built adjoining the old.

Amritsar (153), on the Ravi canal, is the old Sikh capital and the headquarters of their religion. **Lahore**, on the Ravi, the old and present capital of the Punjab, is, like Delhi, a walled city of great historic interest. **Multan** (90), making carpets and pottery, stands near the left bank of the Chenab, on the railways from Lahore and Peshawar to Karachi, and thus much of the trade of that port passes through the town. Its position opposite a mountain pass to Baluchistan made it a comparatively important town in olden days. **Rawal Pindi**, commanding the river valleys opening out of the extreme north-west frontier, is the arsenal of north-west India and a military station. Strategic railways connect it with Kohat and Peshawar. **Murree** and **Simla** are sanatoria on the Himalayan foot-hills; the latter town, at an altitude of 7000 ft. on the southern slopes of the Siwaliks, is the seat of government during the hot season and has a fairly large British population.

Sind. Situated near the tropic and with a slightly southerly aspect, Sind endures the hottest and driest climate in India (p. 58). Vegetation is dependent *entirely* upon irrigation, and the latter upon the annual rise of the Indus waters in June. Inundation canals carry off the flood waters over a million acres of rice fields. The winter temperature would suit the growth of wheat but, in the absence of perennial

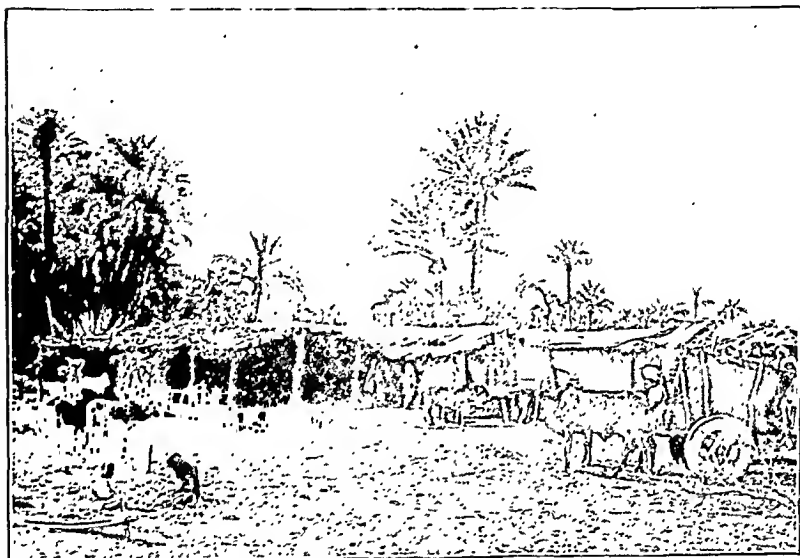


Photo F Bremner

By courtesy of the P & O Steam Navig Co

FIG. 41.—IRRIGATED OASIS IN SIND.

Note the primitive cart, of plaited palm leaves, drawn by humped oxen. The houses are merely sun-shades as rain seldom falls.

canals, there is no water available, and thus the double-cropping practised in the Canal Colonies of the Punjab is not possible here; instead, the rice crop sometimes fails owing to fluctuations in the flood levels.

A scheme to hold up the Indus waters by a barrage at Sukkur, where the river is running between well-defined banks and an outcrop of hard rock in the river bed affords the necessary foothold, was completed in 1932. The disadvantage to shipping is slight, for the fluctuating seasonal depth of the river renders it of little use for

navigation. The waters of such rivers as the Indus, Tigris, Euphrates and Nile, flowing as they do through parched, fertile soil and under a perennial summer sky, reach their maximum of usefulness when held up in this way. By this irrigation scheme it is hoped to irrigate $5\frac{1}{2}$ million acres, at an estimated cost of £12 millions.

Hyderabad, the old capital of Sind, standing at the crossing of routes, has been supplanted by Karachi, a comparatively new city with a large harbour and fine public buildings. The latter is the port of the Indus valley.

EXERCISES.

1. Compare the Indus and Nile in as many ways as you can.
2. What is a canal colony?
3. Account for the importance of Delhi.
4. Estimate the usefulness to India of the Indus.
5. Write notes on (a) Karachi, (b) Peshawar, (c) Rawal Pindi.
6. What is a famine area? Name one. What steps are taken by the Government to prevent famine in these areas?
7. Illustrate, by a sketch map, the Hinterland of Karachi.
8. Draw a sketch map to explain why a town grew up at Delhi.

LESSON XIII.

GANGES BASIN.

1. On the same squared paper plot rainfall graphs for Calcutta, Delhi, Lahore (p. 58). How do they differ?
2. Examine the crop statistics (pp. 85, 86). Draw a circle of 2 in. radius, and divide it into sectors representing the total area under (a) rice, (b) wheat, (c) millets, (d) sugar, (e) maize respectively, in Bengal, Bihar and Orissa, United Provinces combined.
3. Which is the chief jute-producing province? What are the physical characteristics of this province?

4. How does the total area cropped more than once in the Ganges provinces named in 2 compare with the total cropped area in those provinces? What crops will be grown on these areas?

5. Examine the irrigation statistics, p. 85. Why are there so many wells in the United Provinces?

6. Much land in the Ganges basin is irrigated by the natural overflow of the Ganges. In which province will this happen? Name two crops grown on the flooded land (see crop statistics).

7. Examine the Export Statistics for India (p. 86). Name the port exporting most of each of the five articles mentioned?

INDIA : COAL STATISTICS.

	Milhon Tons.
Jherria - - - -	9
Raniganj - - - -	5
Other places - - - -	3
Total - - - -	17

8. Comment on the position of Jherria and Raniganj, stating whether they are conveniently situated or otherwise.

9. Examine the Exports from Bengal, p. 86. Draw rectangles to illustrate. Which of these exports was not grown in Bengal?

The Ganges. The Ganges rises in the ice-fields of Tibet, and enters the plain just above Hardwar, one of the sacred Hindu cities. From this point to the sea—1100 miles—the fall is slight, and the river is navigable by large vessels. The Jumna enters at Allāhabād, which is, on this account, a sacred city. The left bank tributaries are more numerous, the chief being the Gumti, Gogra and Gandak. From the junction of the Gogra onwards, the river varies in width from two to four miles, enclosing at intervals long, bare, sandy islands, wherever the speed of the river is checked or a tributary brings in its muddy waters. In the flood season

the waters cover the adjacent plain, extending, as the delta is approached, upwards of 70 miles each side of the bed. When the waters subside a deposit of fine silt is left over millions of acres of rice, jute, and poppy fields, rendering manures unnecessary and endowing the land with perennial fertility.

About 200 miles from the sea, the river throws off various right-bank distributaries, of which only the first, the **Hugli**, is navigable. All suffer from tidal bores; in the case of the Hugli the strong inrushing current brings about an undue deposition of silt in the navigable channel.

The estuary of the Brahmaputra and Ganges is called the river **Meghna**, and is navigable by large steamers. The deltaic channels are filled to overflowing in the flood season, and little except the taller vegetation of the delta can be seen for three weeks. The marshy, water-logged jungle land of the lower delta is called the **Sunderbunds**—probably because of the Sundri tree which grows there. Tigers and other wild beast abound in it.

Uses of the river. Many large canals lead out of both the Jumna and Ganges in their middle courses, and canal colonies have been established round them (Fig. 43); in the lower course the flood waters are led away by natural channels. Below Patna the rainfall is sufficient for most crops, and the overflow of the river is desired chiefly for the silt. Unlike most rivers subject to annual floods, the Ganges is of great use for navigation, and its value to India as a commercial highway is incalculable.

Brahmaputra. This river rises in Tibet and cuts through the Himalayan system in a deep transverse gorge 170 miles in length, dropping in level from 8000 ft. to 400 ft., or 47 feet per mile. This stage of the river, in which it is known as the **Dihang**, is difficult of access, and is in part unsurveyed. Thence to the junction with the Ganges the fall is little more than 6 inches per mile, and this sudden change of incline is accompanied by the deposition of silt in enormous quantities round the slightest obstacle, as *e.g.* a fallen tree, or an anchored steamer. "The swamps which closely adjoin

the elevated alluvial foundation of the river bed are flooded in the rainy season till the lower reaches of the valley are one vast shining sea, from which the hills slope up on either side." A regular service of steamers plies from Goalanda to Dibrugarh (800 miles); large vessels can ascend to Gauhati.

Geographical unit. The Ganges plain corresponds roughly with the United Provinces, Bihar and Orissa, and Bengal;

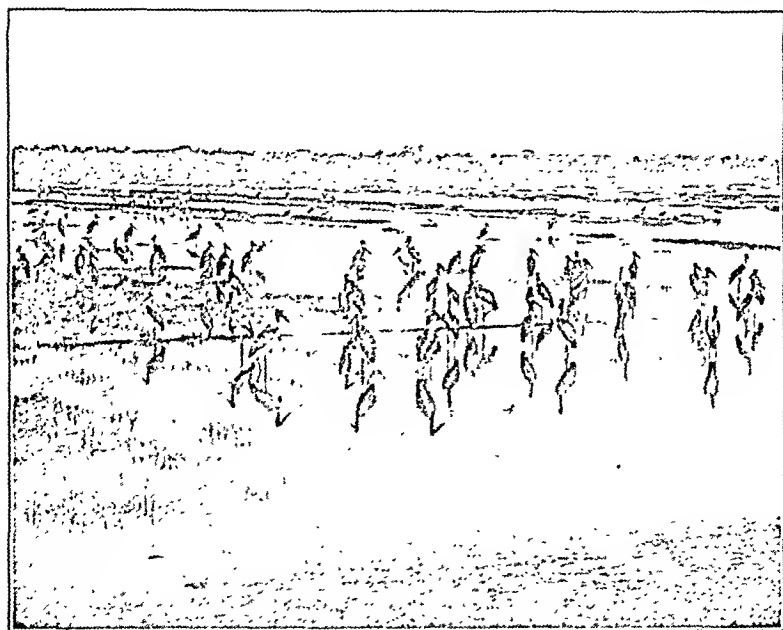


Photo Johnston & Hoffmann.

FIG. 42 —SCENE IN THE SUNDERBUNDS.

the last province, however, includes part of the Brahmaputra basin, and Orissa includes the Mahanadi delta. Northward it passes into the foothills of the Himalayas; southward it is flanked by the sharp northern edge of peninsular India.

The Ganges plain is almost unique as a geographical unit; it presents a homogeneity of natural and physical features unequalled anywhere else on the globe. The soil is everywhere of fine alluvium, reaching in Bengal a depth of 500 feet. The direction of the plain along a parallel of

latitude, and the magnitude and unbroken character of its northern climatic barrier, give it a remarkable uniformity of temperature at each season. Throughout the whole 300,000 square miles of area there is not a single hill, but everywhere a flat, tree-less plain, "of which the unbroken monotony is a weariness to contemplate." A navigable river traverses it from end to end. Finally the whole area is under the

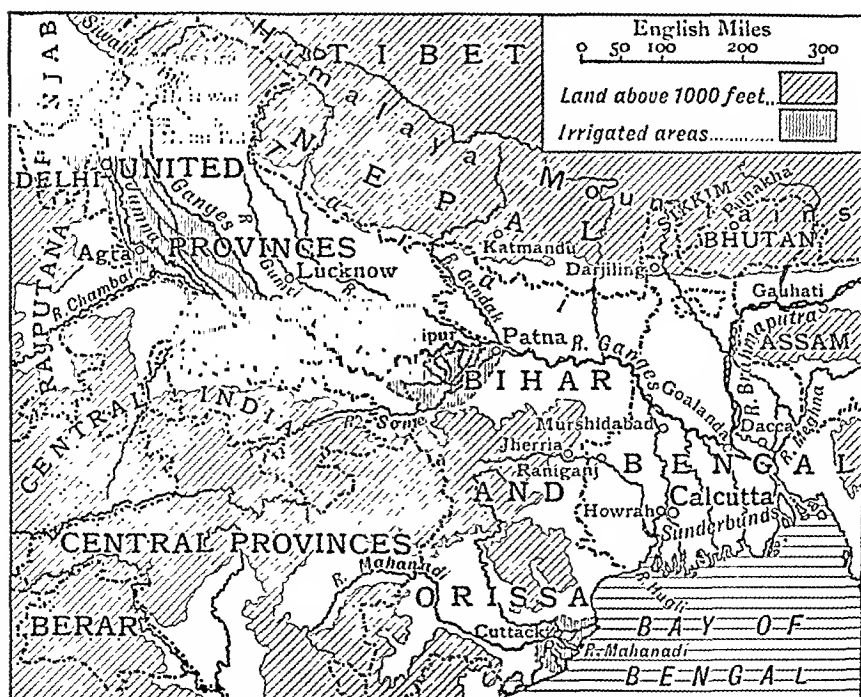


FIG. 43.—GANGES BASIN. (Note the Key.)

political rule of the Indian Government, and benefits equally from its social and economic efforts.

Climate, products, population. The temperatures are practically those of the isotherm maps. Calcutta has a temperature above 68° for ten months in the year, so that two crops of rice, maize or sugar—all food products—can be grown yearly from the same plot. At Allahabad, there are eight months with temperatures above 68° F. and four with temperatures above 60° F., so that on each plot may be grown one of each of the above crops and one of wheat;

the only uncertain factor is moisture. The United Provinces receive a very variable rainfall—some years scarcely any—and recourse has been had to irrigation schemes. There are now nearly 10,000 miles of canals and the value of the crops raised annually in the canal colonies exceeds £8,000,000. Wells have also been dug from which the water is laboriously drawn, usually by oxen, and tipped into irrigation ditches. In Bihar and Bengal there are thousands of natural water channels; in fact, Bengal suffers from an excess of rain and rain-water.

The result of the abundance of food brought about by the high temperature and the characteristics of the Ganges is a dense population, decreasing westward with the rainfall; in Bengal there are 550 people to the square mile, and in the United Provinces 400. The population of the Ganges basin is 42 per cent. of the total for the whole of India, and practically equals that of North and South America put together (omitting Central America). Only 10 per cent. live in towns; the remainder are largely agricultural. No other area in the world supports so dense a population entirely on the produce of the soil.

The ryot, or farmer, is extremely industrious, so that his farm, averaging *half an acre* in extent, is easily able to support him. Little thought is necessary, as nature is so bountiful; hence progress in the past (and in the present), has been extremely slow.

Cropping seasons. There are two chief cropping seasons in the Ganges plain, determined by the periodic supply of moisture, although the Bengal farmer on the banks of his perennial irrigation canals may, and does, sow his crops at all times of the year. These two seasons are autumn (*kharif*) and spring (*rabi*).

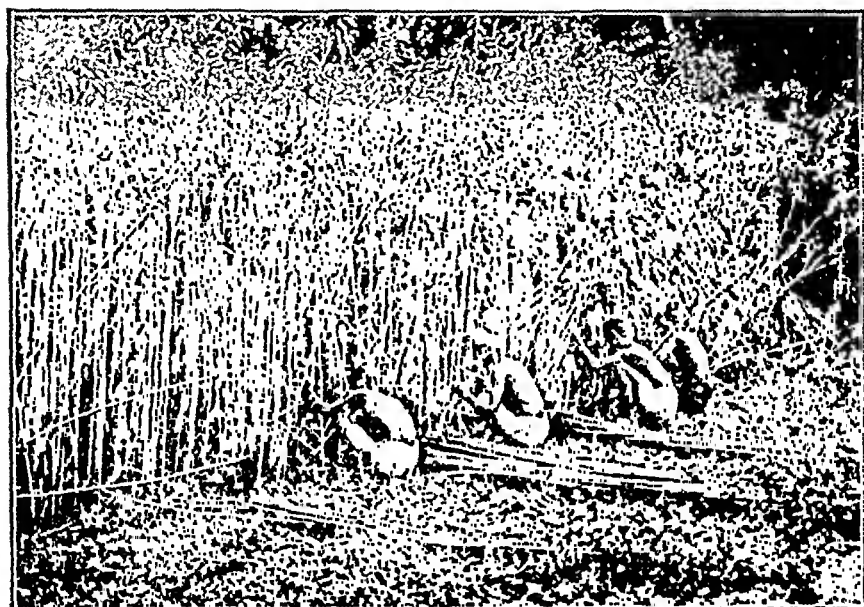
The autumn crops are sown in June and July, after the monsoon rains have set in, and are reaped between September and December; they are crops needing much moisture, or great heat, or both, e.g. *rice, sugar, cotton*.

The spring crops are sown in October and November, when

the monsoon rains have ceased, and are reaped in March and April. The chief are wheat, millet, oil-seeds—all needing moderate heat and moisture.

Rice. India produces almost half the rice of the world. Bengal is the principal producer and consumer; Burma, with its small population and magnificent flood river, is the chief exporter.

Conditions. Rice needs a high temperature and must be



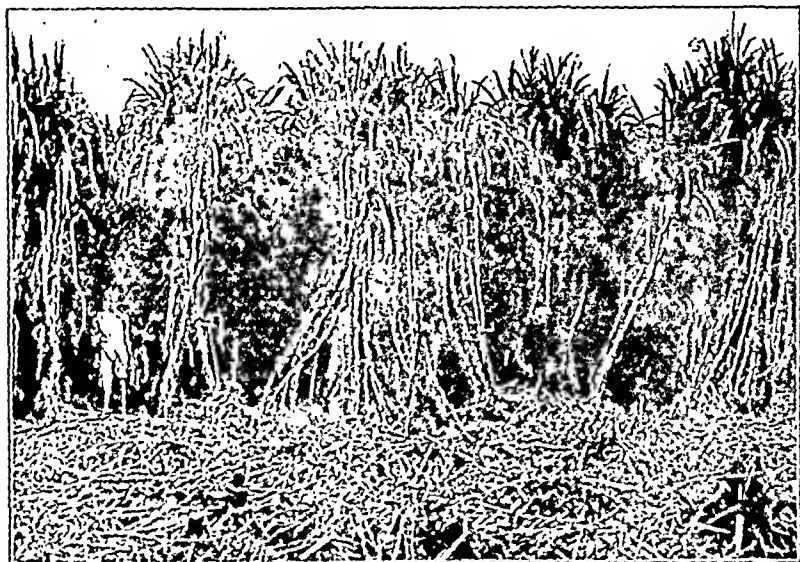
By courtesy of the Director of the Imperial and Colonial Institute

FIG. 41.—CUTTING JUTE IN BENGAL.

grown in fields capable of being flooded. The seeds are sown in wet nursery beds, and when the little plants are about a month old, they are transplanted into "paddy" fields covered with about two inches of water. The water is drawn off and renewed from time to time, the depth increasing with the growth of the plant; as the crop begins to ripen the water is drawn off altogether. Weeding is done by hand, and is an unhealthy and obnoxious operation, for in addition to the workers having to wade knee deep in water from the surface of which the sun's rays are reflected to the

face, they are often bitten by water-bred insects and creatures, such as leeches. By some it is thought that the practice of opium smoking, so prevalent in the rice-growing countries of Asia, originated with the workers on the rice fields who consumed opium to deaden the pain from bites.

Jute. The mud flats of the Ganges delta and the lower course of the Brahmaputra form the chief jute-growing area



By courtesy of the Director of the Imperial and Colonial Institute.

FIG. 45.—SUGAR CANE.

of the world, and little is grown elsewhere. The crop requires a warm and damp atmosphere and a soil that is being constantly renewed or manured; hence jute is grown on the mud-flats left annually after the floods (Fig. 44). The fibre is sent to Calcutta or Dundee, where it is made into gunny sacks, sail-cloth, ropes, carpets, etc.

Towns and industries. The oldest and most important towns of the Ganges plain are on the water ways. Their sites were either landing stages or "holy" places. Round them artisans and others settled, who catered for the traders

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and for the yearly influx of pilgrims. The goods made included such things as highly ornamented trinkets, silk fabrics of complicated pattern—goods, that is to say, involving much time and patience and therefore costly, and yet admitting of easy transport.

British rule, however, brought western methods, so that ancient towns possessing natural commercial advantages have developed modern industrial suburbs. The industrial movement is expanding, for labour is cheap and plentiful (thousands emigrate from Calcutta yearly), raw material—such as jute, sugar, cotton, wool—is near, and there is a populous home market.

Calcutta (1220), situated near the old trading station Fort William, 80 miles up the Hugli, was the seat of government until 1912. Its situation near the Jherria and Raniganj coalfields, and at the outlet of the jute, rice, and wheat fields, makes it a busy industrial city. The modern quarter of the city contains fine streets and handsome public buildings. It is connected by bridge with Howrah which, like Calcutta, has jute mills. In the hot season many people move to Darjiling, a hill station 7000 feet above the plain (Fig. 43). Dacca (108), long famous for its muslins, is also engaged in the jute industry. Patna is an agricultural centre, surrounded by opium fields. Benares (204), a city of ghats and temples, is the religious centre of the Brahmins; it manufactures brass ware, jewellery and embroidery, all portable goods for the pilgrims. Lucknow (260) and Cawnpore (180) are important manufacturing and commercial towns possessing cotton, wool, silk and paper mills; also tanneries and iron foundries. At Agra (185), once the old Mogul capital, are many beautiful buildings—notably the Taj Mahal. Allahabad and Hardwar are holy cities; near the latter town are Mussoorie, Naini Tal and Roorkee, well-known hill stations.

EXERCISES.

1. Account fully for the dense population in the Ganges valley.

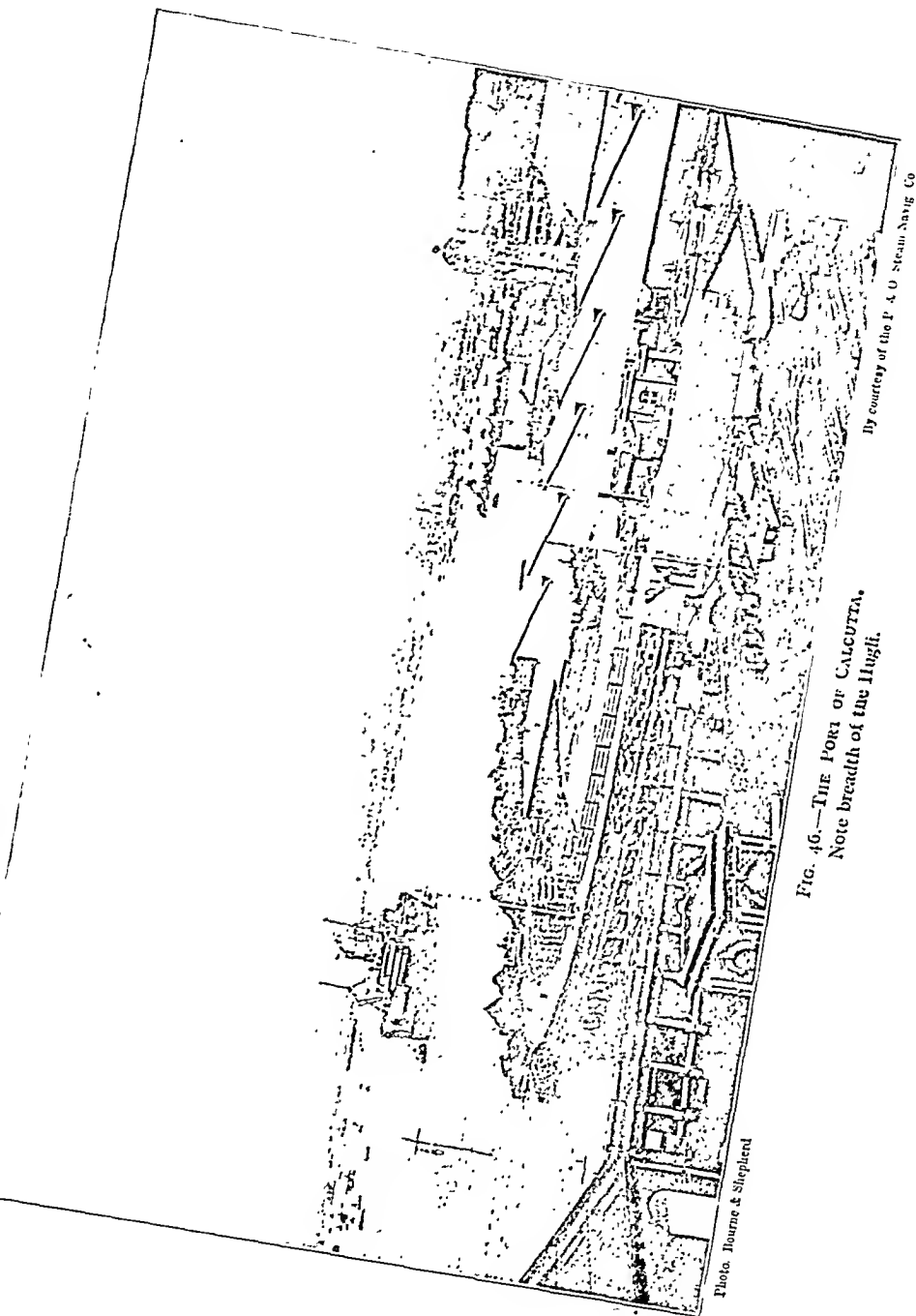


FIG. 46.—THE PORT OF CALCUTTA.
Note breadth of the Hugli.

by courtesy of the P. & O. Steam Navig Co

2. Account for the importance of (a) Calcutta, (b) Allahabad, (c) Benares.
3. Why is the Brahmaputra less useful than the Ganges ?
4. Write notes on (a) Sunderbunds, (b) rice, (c) jute.
5. Draw a map of the Ganges basin, indicating upon it the areas under jute and rice. Insert Calcutta, Darjiling, Raniganj, Jherria, Howrah, Patna, Benares, Lucknow, Cawnpore, Sunderbunds.

LESSON XIV.

PENINSULAR INDIA.

1. Draw a section across Peninsular India from Leh to Cape Comorin ; horizontal scale 1 inch = 300 miles, vertical scale 1 inch = 5000 ft. Mark, above it, the names : Ganges Valley, Narbadda Valley, Palghat Gap, Vindhya Mts., Satpura Mts., Nilgiri Hills, Cardamom Hills, The Deccan.
2. Draw a section across the Deccan from Bombay to Cuttack, using the same scales as in Ques. 1. Mark : W. Ghats, Wainganga, E. Ghats.
3. Look up the statistics in previous lessons and fill up the following tabular statement :

	Area.	Pop. Density, High or Low ?	Rainfall, Heavy or Light ?	Productivity.
Rajputana -				
Central India -				
Central Provinces -				

4. What will be the port of export for the produce of Rajputana, Central India, and Central Provinces respectively ?
5. Look up the Crop Statistics, p. 86, and Irrigation Statistics, p. 85, for Central Provinces. Comment on the chief crop, stating where it will be grown, and on the extent of the irrigation works. Suggest crops for the area cropped twice.

Build and rock structure. The relief and climate of Peninsular India have already been described (pp. 62-3). The rock structure is simple. The core, or nucleus, is composed of ancient crystalline rock (Fig. 47), in which were found the gold and precious stones—as, e.g. at Golconda, for which India was famous in bygone ages. Above this crystalline basement were deposited, in the northern part of the plateau, layers of red sandstone; the plateau of Malwa and the Vindhya-Mahadeo ranges are built largely of this rock. Above the sandstone, over the area shown in Fig. 47, layer after layer of basalt was afterwards poured out from the interior of the earth; the weathered western edges of these volcanic sheets, appearing like terraces, were thus called ghats (= stairs). The two coastal strips consist mostly of alluvium; the western strip suffers from too much water, the eastern from too little.

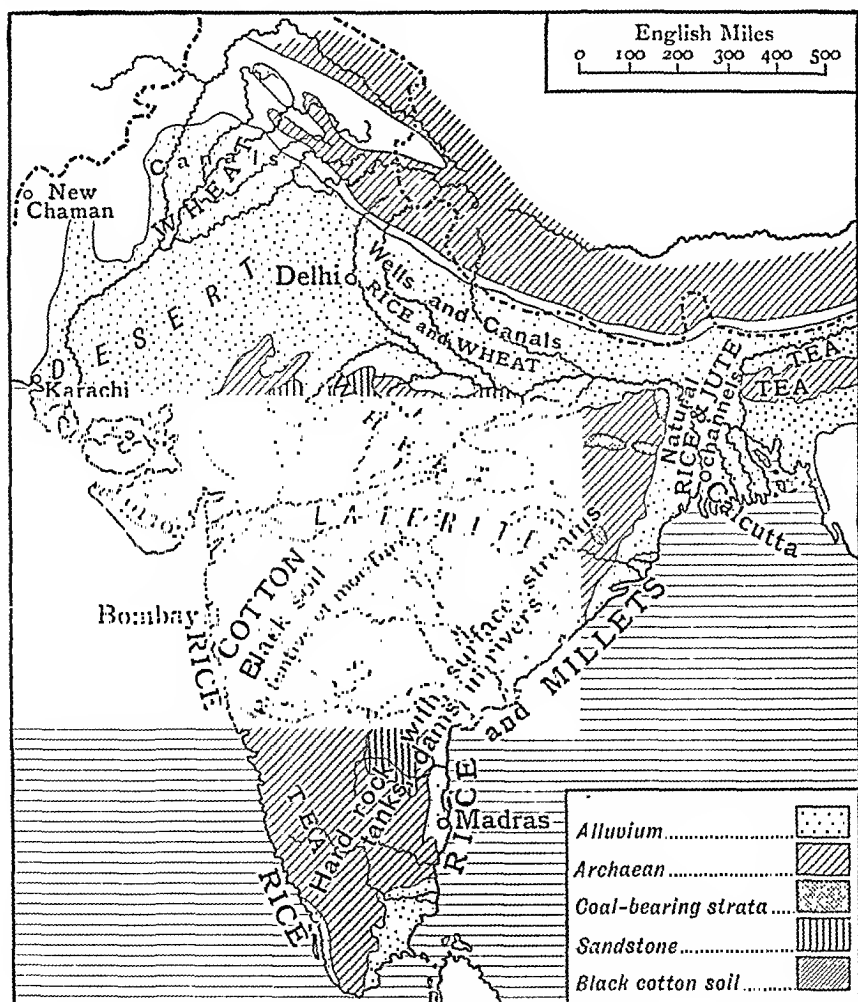
✓ **Soils and natural vegetation.** The natural vegetation is varied. The Western Ghats are covered with evergreen tropical forests in the south which give way to forests of teak, sal and other deciduous trees in the neighbourhood of Bombay. The drier conditions on the plateau are unfavourable to dense forest growth. The Deccan is largely grassland, with patches of scrub containing acacias and tamarisks; teak and sal, both valuable timber trees, replace the scrub wherever the period of drought is not so pronounced. In the valleys of the Godavari, Kistna and Cauveri the vegetation is again tropical, dense forests and swampy jungle prevailing.

The prevalence of grasslands on the plateaux is not due solely to the scanty rainfall. Much of the Deccan is covered with a red, brick-like soil called laterite formed by the decomposition of certain volcanic rocks. This soil is extremely porous and of great depth, and thus unsuited to tree growth.

Another soil spread widely over the Deccan is the black soil of the basalt areas. Being rich in lime it is highly suited for growing cotton. In addition it is less porous than laterite, for during the rains it becomes a tenacious mud through which water sinks with difficulty. In the dry season evapora-

tion through this soil is checked by the formation of a hard surface layer, so that irrigation is nowhere necessary.

The eastern edge of the Deccan is composed of hard non-porous crystalline rocks, off which rain water runs as surface

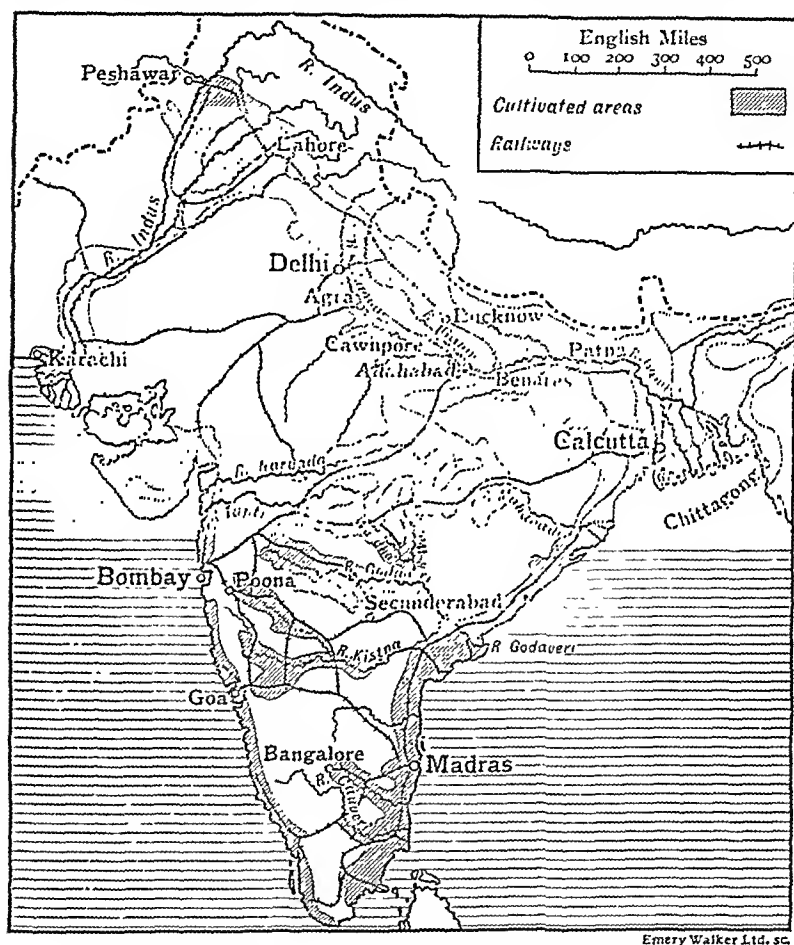


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FIG. 47.—INDIA: SOILS AND PRODUCTS.

streams. In this area the rainfall is uncertain both as to quantity and distribution; hence efforts are made to trap the water by building dams across the rivers and by constructing large shallow storage tanks. The Madras Presidency, watered by the fitful winter monsoon, has over 3000 such tanks.

Crops. The ryot, or peasant, is a careful farmer and, as a rule, owns his small holding. His draught animal is the cow. Food-crops predominate. Millet and pulses are grown everywhere and form, with milk, the staple food of the people.



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FIG. 48.—INDIA: CULTIVATED AREAS IN RELATION TO RAILWAYS, RIVERS AND PORTS.

There are two cropping seasons. The rabi or winter crops, which include oil-seeds, pulses, wheat and tobacco, are sown in the autumn and reaped in early summer. Wheat is grown chiefly on the Malwa plateau, in Central India,

Central Provinces and parts of Hyderabad. Tobacco is cultivated in the plains of S. Madras round Trichinopoly.

The kharif or summer crops, comprising chiefly pulses, rice, maize, sugar and cotton, are sown after the monsoon rains and reaped in late autumn. Rice is grown chiefly in the lowlands of Madras and Bombay. Cotton, on the contrary, is produced on the plateaux—in Bombay, Madras, Central India and Hyderabad. The crop is inferior to that of the United States both in quality and yield. There are cotton mills at Bombay, but the greater part of the cotton crop is exported to Japan. Very little goes to Britain as the quality is too poor.

Minerals. Peninsular India possesses considerable mineral resources which at present, however, are little worked. Coal is mined in the Central Provinces and Hyderabad (Singareni), and is used chiefly for railway locomotives. Manganese is obtained in the Central Provinces, and shipped to Britain and the United States as raw ore.

Of other minerals the chief is gold, obtained almost entirely (96 per cent.) from the Kolar field in Mysore.

Rajputana. This is a group of 21 Native States, with the area of the British Isles and a population of 10 millions. The Aravallis divide it into two portions. The north-western portion, sandy, ill-watered and unproductive, passes from savannah and scrub in the east to utter desert along the Sind and Punjab border.

The eastern portion, watered by the Chambal, consists of gentle ridges parallel to the Aravallis, with broad sand-filled valleys. Wells and other irrigation works are numerous, and the area is, on the whole, fertile. Savannah predominates. Famine railways traverse the settled districts, which occasionally suffer severely from failure of the monsoon. Food products, e.g. millets, pulses and wheat, are grown, and there is a considerable output of salt from the Sambhar lake.

Guarded on the west by the Aravallis and the Thar desert, Rajputana was open to attack on the north and suffered terribly from various Mussulman invasions. Most of the

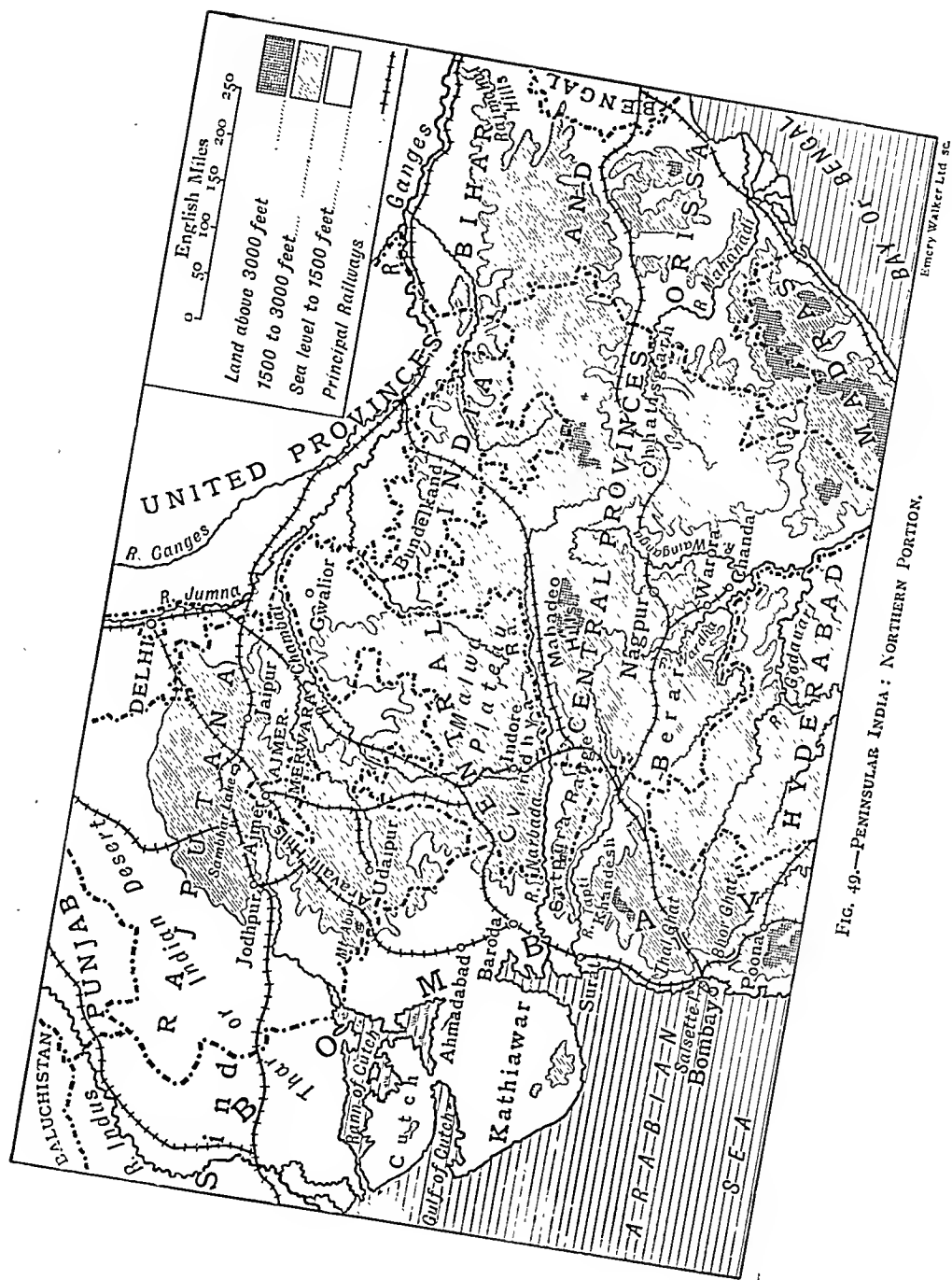


FIG. 49.—PENINSULAR INDIA: NORTHERN PORTION.

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cities have had a tragic history ; the chief are Jaipur, making art pottery, Udaipur and Jodhpur. On Mt. Abu, a detached peak at the south of the Aravallis, is the residence of the British Political Agent.

Central India. This area, containing about 150 Native States, continues the physical features of Rajputana eastward,

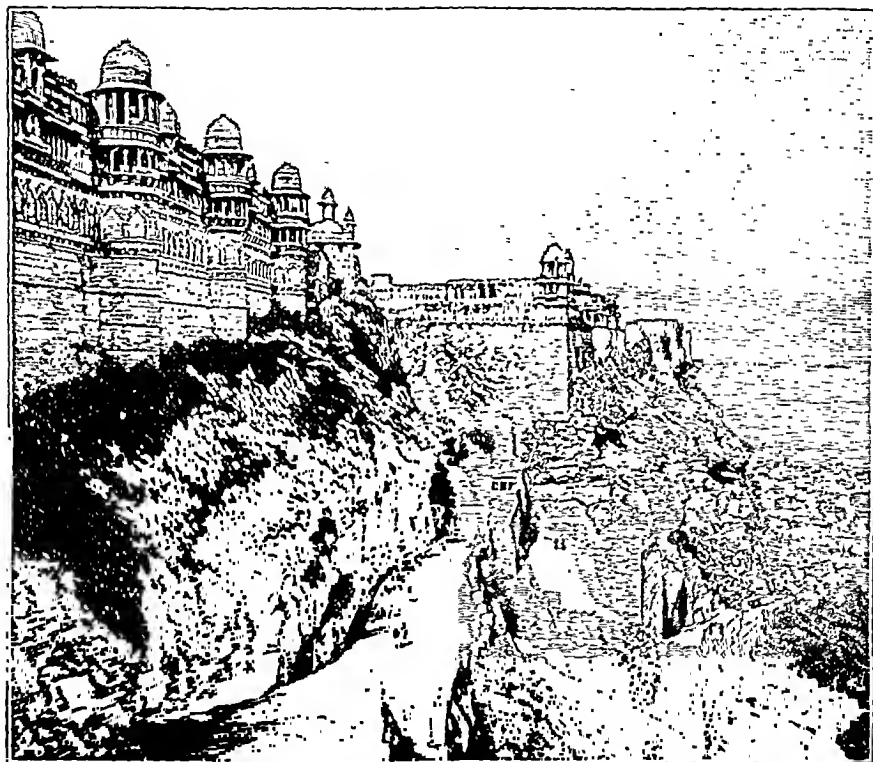


FIG. 50.—GWAJIOR FORT.

Built on a huge rock. It was the last stronghold of the Indian mutineers.

and has had a similarly troubled history. It consists largely of forest and grass-lands draining into the Ganges. The country is entirely agricultural, and in addition to wheat and other food crops there are extensive areas under cotton and opium on the Malwa plateau. Bundelkand, separated from the western part of Central India by a narrow strip of the Central Provinces, is not very fertile. The Vindhya and Satpura

slopes are thinly peopled by Gonds and Bhils. The chief cities are Gwalior and Indore. The former, famous for its rock fortress, was the last stronghold of the Indian mutineers. Both lie at the meeting place of important routes.

Central Provinces. This is a British state occupying the southern slopes of the extensive plateaux and hill ranges that divide the Ganges basin from those of the Mahanadi and Godavari. Included in it is Berar, formerly a part of the native state of Hyderabad, the total area being slightly greater than that of the British Isles. The population is chiefly gathered in the valleys of the Wainganga, Wardha, and Narbada, where wheat, cotton and rice are extensively produced. Wheat is grown on the Chhatisgarh plains traversed by the railway; coal and iron-ore are mined in the Wardha valley at Warora and Chanda.

Nagpur (101), on the Great Indian Peninsula railway from Bombay to Calcutta, is the seat of government. Cotton spinning is a domestic industry.

The native states (Bastar, etc.), occupying the hilly forested country in the south-east, are inhabited by wild hill tribes such as the primitive Gonds; very little is known about this region.

EXERCISES.

1. Why are the Rajputs such good fighters?
2. Write notes on (a) laterite, (b) black cotton soil.
3. Describe briefly the weather you would have at Bombay from January to July.
4. What is the chief crop of both Rajputana and Central India? State where and during what season it is grown.

LESSON XV.

PENINSULAR INDIA—*continued.*

1. Look up the crop statistics, p. 86, and write out the three chief crops of Sind, Bombay, Madras respectively.
2. Examine exports from Bombay, p. 86. Construct rectangles, $\frac{1}{2}$ in. base, to represent the quantities named.
3. Three-quarters of the cotton spindles and looms in India are at Bombay. Point out any advantages that Bombay possesses for carrying on the cotton industry.

WORLD'S COTTON CROP.

U.S.A.	-	-	16 million bales (1 bale = 500 lbs.).
British India	-	-	5 " "
Egypt	-	-	2 " "
World	-	-	26 " "

4. Draw a circle of one inch radius, and cut off sectors proportional to the cotton output of the above three areas. Mark the fourth sector "Other countries."

5. Look up the crop statistics of Bombay, p. 86; also irrigation statistics, p. 85. Why is so little rice grown? Why is so small an area irrigated?

6. Compare the irrigation systems employed in Madras with those of the Punjab and Sind. What do these statistics tell us about (a) the rivers, (b) the rainfall, (c) the rocks, of the provinces mentioned?

7. In which parts of Madras will the irrigation works consist of (a) canals, (b) tanks, (c) wells? Give reasons.

8. With regard to Madras Presidency, estimate (a) What fraction of the total area is cropped. (b) What fraction of the cropped area is irrigated. (c) What fraction of the cropped area is cropped twice.

9. Draw rectangles, $\frac{1}{2}$ in. base, to illustrate the exports of Madras, p. 86 (1930).

Hyderabad or Nizam's Dominions. This is a large native state entirely surrounded by British territory. A broad upland

area crosses the country separating the valley of the Godavari from that of the Kistna. Neither river is navigable, and few people live immediately near their malaria-infested banks, except in their higher courses. The prevailing natural vegetation is grass, on which sheep and horses of high quality are reared. In the river valleys towards the west, cotton is the chief crop, elsewhere indigo, sugar-cane, pine apples and, of course, millets. The sandy region in the south-east

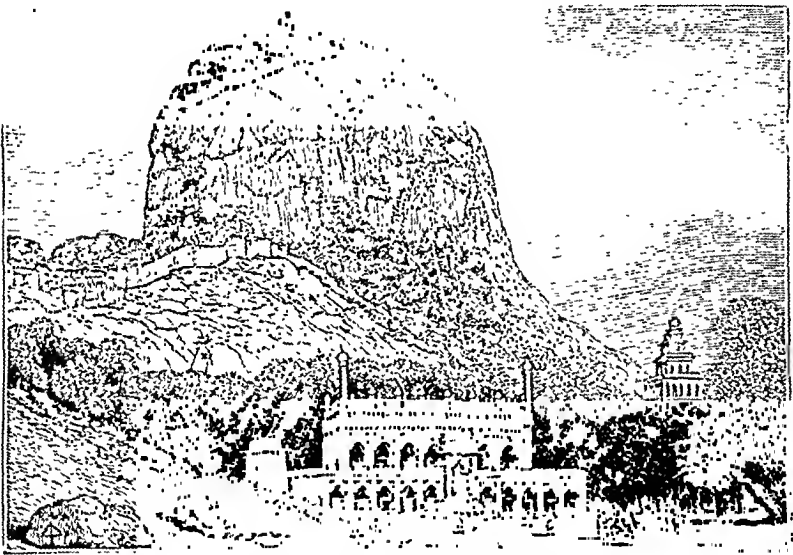


FIG. 51.—ONE OF THE DROOGS OF MYSORE.

Note the fortress (see p. 114).

abounds in tanks. Coal is mined, for the railways, at Singareni.

Hyderabad, the capital, standing in a strategic position among picturesque scenery, contains the palace of the Nizam or chief ruler. A large British garrison is posted at Secunderabad, close at hand. Golconda was once famous for its diamonds.

Mysore. Mysore, like Hyderabad, is a native state set in the midst of British territory ; it occupies the southern angle of the Deccan triangle. From 1831 to 1881, it was entirely under

British rule, and as the British system of government has been continued, the state is governed on enlightened principles. A striking feature of the central grassy plain, called the **Maidan**, is a number of rock piles—**droogs**—which rise almost precipitously to a height of 1000 feet above the surrounding country. As many of them contained water at their summits they were ideal sites for fortresses, and figured largely in the campaigns against Hyder Ali and Tippu (Fig. 51). The Cauvery descends the E. Ghats in a number of falls which are used to generate electricity for the **Kolar** goldfield, a hundred miles away.

As the rainfall is scanty and uncertain, dams have been made in the rivers and the water diverted into tanks and irrigation channels. The chief crops are oil-seeds, rice, millets, sugar cane and cotton; coffee and tea are grown on the forest clearings on the Nilgiris and Ghats. Sandalwood and cinchona, from which are obtained sandalwood oil and quinine respectively, are useful forest products.

Bangalore, a military station, is the chief town. **Mysore** and **Seringapatam**, now small towns, were the capitals of the two sultans Hyder Ali and Tippu.

Bombay Presidency. This area includes the west coast and immediate interior from Sind to about lat. 14° N. Of this area about one-third consists of native states; the remainder is under the direct control of the governor of Bombay.

Sind, hot, flat and dry, has already been described (p. 93). Adjoining Sind are a number of native states, of which Cutch is the chief. Cutch is a treeless, barren, rocky peninsula, enclosed by the Rann and Gulf of Cutch. Salt is obtained by evaporation from the Rann, which is alternately a shallow lagoon and a stony, salt-encrusted waste, over which roam herds of antelopes and wild asses. The peninsula of **Kathiawar**, containing nearly 200 small native states, grows cotton on its fertile, well-watered black soil. **Ahmadabad** (217) has an extensive cotton industry. There is an important pearl fishery off the coast.

Baroda, comprising a number of small native states, grows

cotton and tobacco and has a comparatively dense population. It is, however, under the control of the Government of India and not of the Governor of Bombay.

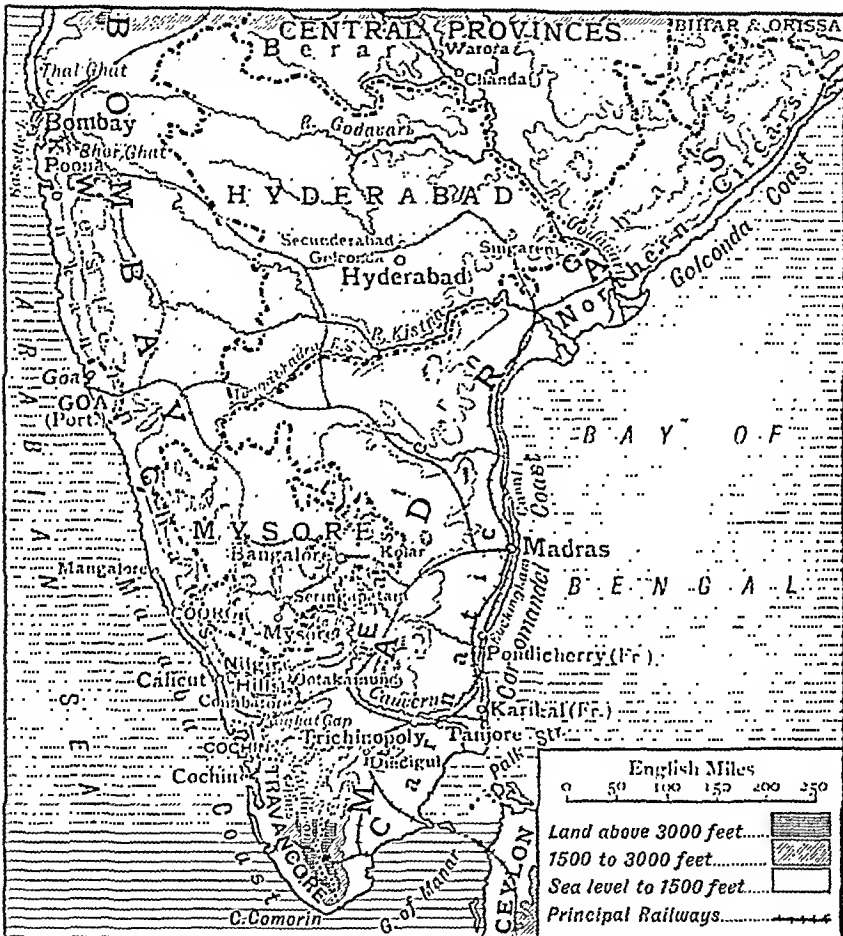


FIG. 52.—PENINSULAR INDIA: SOUTHERN PORTION.

The valleys of the Narmada and Tapi are extremely fertile; especially in Khandesh, where the deep black soil produces heavy crops of cotton and wheat; neither river is navigable.

South of the Tapi is a long, lowland strip, 2-50 miles broad, called the Konkan. This strip produces rice, while

there are extensive plantations of palms along the shore. The slopes of the Ghats are densely wooded.

The Deccan strip is not very fertile, except in the south-east immediately behind the small Portuguese territory of Goa. Cotton is the chief non-food crop.

— Bombay (1200), the second port in India, is situated on Bombay island which, with the island of Salsette immediately to the north, forms the western side of a magnificent natural harbour. Railways to Calcutta and Madras cross to the mainland by a bridge and climb up to the plateau through the Thal Ghat and Bhor Ghat respectively. The ascent in each case is very steep, and the tracks zigzag about; at intervals there are reversing stations. By these railways cotton and other products of the plateau are brought down to the port (p. 86), and to that fact and its position facing the Suez Canal, the city owes its importance. Its situation and damp, summer climate make it the natural seat of the cotton industry, although steam has to be passed through the mills in the winter months; the cottons are sold in India. Tanning and metal work are other industries.

Many of the Bombay merchants are Parsis, whose religion is fire-worship. During the hot season the government migrates to Poona (160), a hill station and military camp on the plateau.

Madras Presidency. This is the largest and one of the most densely populated states in Peninsular India. Physically it may be divided into three portions; a western coastal plain, an eastern coastal plain, and the central tableland.

The western coastal plain, known as the Malabar coast, is seamed by swift periodic rivers and covered with sandy soil. Palms along the shore; rice, pepper, and spices in the interior; teak, sandalwood and bamboo on the Ghats and Cardamom slopes, are the chief products. This coastal plain is very productive, especially in the native states of Cochin and Travancore, where the population exceeds 450 to the square mile. Tea and coffee are grown in these states and on the

Nilgiris round Coimbatore. There are few ports and no good harbours. Calicut, to which the cloth called calico owes its name, is a small port opposite the Palghat gap. Goa is the port of a small Portuguese territory of the same name.

The eastern coastal strip is known as the Northern Circars, north of the Kistna, and as the Carnatic, south of that river. The Northern Circars is a fertile tract, but the Eastern Ghats behind it is rugged country covered with dense jungle. Tobacco and rice of superior quality are produced in the highly irrigated delta of the Godavari.

The Carnatic suffers from frequent droughts. Irrigation is extensively practised by means of tanks, wells and canals, the rivers being of more use in this connection than for navigation. The Buckingham Canal, running from the coast south of Madras northwards to the Godavari, contains salt water and is used for navigation only. Rice and millets are the chief food crops, while excellent tobacco is grown in the Cauvery basin round Trichinopoly, Tanjore and Dindigul, where the population exceeds 600 per square mile. Palms grow along the flat harbourless shore, while cotton is the chief crop on the arid and almost treeless plateau. The Eastern Ghats show for the most part a bare rocky face to the Carnatic.

Madras (519), the seat of government and chief town, is situated at the centre of the coast, along which its white houses straggles for nearly ten miles. The harbour has been created by constructing two huge stone piers over 1300 yds. long, within which there is safe anchorage for the largest vessels. Silk and cotton weaving are carried on, and there are also tobacco factories and iron foundries. The chief summer resort is Ootakamund ("Ooty"), on the Nilgiris, approached by a rack-and-pinion railway from the foot of the hills.

Pondicherry, weaving cotton, and Karikal, belong to France.

EXERCISES.

1. Account fully for the importance of Bombay city.
2. In which parts of Peninsular India do the rivers drain (a) below ground, (b) above ground? and why?
3. Describe the physical features and products of the Deccan.
4. Write notes on (a) Poona, (b) Ootakamund.
5. Compare the Malabar and Coromandel coasts as regards (a) climate, (b) products.
6. Write notes on (a) Rann of Cutch, (b) Palghat Gap, (c) Konkan, (d) Northern Circars, (e) Buckingham Canal.
7. In which part of Peninsular India are irrigation works found? Describe them, and state why they are necessary.
8. On a sketch map of Peninsular India insert (a) area under cotton and rice, (b) chief towns, (c) railways.
9. Illustrate, by a sketch map, the Hinderland of the port of Bombay—Insert railways.

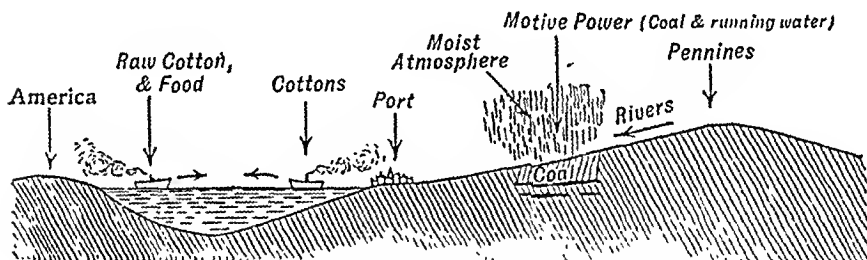


FIG. 53.—DIAGRAM ILLUSTRATING THE VARIOUS FACTORS OF THE LANCASHIRE COTTON INDUSTRY.

10. Fig. 53 shows diagrammatically the various factors of the Lancashire cotton industry. Express in a similar manner the factors in the cotton industry of Bombay.

LESSON XVI.

ASSAM AND BURMA.

TEA STATISTICS.

Acreeage under Tea.	1,000 acres.	Exports from India.	£ millions.
Assam - - -	420	United Kingdom -	17
Bengal - - -	188	Russia - - -	1
Other Provinces -	130	Other Countries -	2
Total for India -	738	Total exports -	20

1. (a) What percentage of the total tea area of India is situated in Assam?

(b) The total production of tea is 370 million lb. What amount of tea does each acre produce?

(c) What fraction of the total tea import into Britain (£37 millions) comes from India?

(d) Name the port from which most tea is exported.

2. Examine the exports of Burma, p. 86. Timber is also an export. In which part of Burma will each export be produced?

ASSAM.

Relief. Assam is a mountain-girt triangular area. The heart of the country is occupied by the Assam Hills, known in parts as the Khasi, Garo and Naga Hills, from the names of the tribes who inhabit them; they thus divide the large valley of the Brahmaputra from the smaller Surma Valley, which resembles the former in its alluvial soil and liability to flood in the rainy season.

Climate and products. The temperature of the valleys varies from 60° F. to 85° F., and cereals can be grown at all seasons. The Assam Hills obstruct the summer monsoon at its wettest, and the southern face receives the heaviest recorded rainfall in the world; Cherra-pungi on the Khasi Hills

has a mean annual rainfall of 500 inches. A considerable rainfall (10-20 ins.) results from the winter monsoon, so that the sluggish streams of the Surma valley run full all the year round. About half the country is covered with forests of teak, sal and bamboo, now giving way before the axe and fire of the rice-cultivator and tea-planter.

Indigenous breeds of silk-worms, spinning a coarse form of silk, feed on the laurels and castor-oil plants found on the lower hills, but little raw or manufactured silk is exported. Jute is grown in the lower Brahmaputra valley and exported to Calcutta. Coal is mined near Makum, chiefly by Chinese labour; petroleum is obtained at Digboi, and some gold is extracted from the sands of the Dihang river.

The population is densest in the Surma (400 to sq. mile) and Brahmaputra valleys (125 to sq. mile), and is scanty on the hills, where the numbers of the wild Nagas, etc., cannot be ascertained. Over 80 per cent. are peasant proprietors who refuse to work for other people. The tea-estates and government works employ imported labour from Peninsular India.

Tea industry. The premier industry, tea, is in the hands of British planters. In 1875 China supplied 86 per cent. of the tea imported into Britain, India 13 per cent.; to-day China sends 3 per cent. and India 46 per cent., of which two-thirds is from Assam.

The tea-shrub is indigenous to Assam, and was found growing there as a tree 40-50 feet high. The tea-plantations are on the lower slopes of the Assam Hills, with Sylhet and Sibsagar as centres. Here are found all the natural requirements for successful cultivation, viz. :

1. Warm, moist climate with summer rain.
2. Ferruginous soil, with top-dressing of vegetable mould.
3. Easy drainage.
4. Abundance of cheap food for the coolies.

The last requirement is essential if the tea is to compete successfully in the world's markets, for it is found that the chief expense in connection with each crop is the plucking, and wages of pluckers vary with the price of food. Rice is the

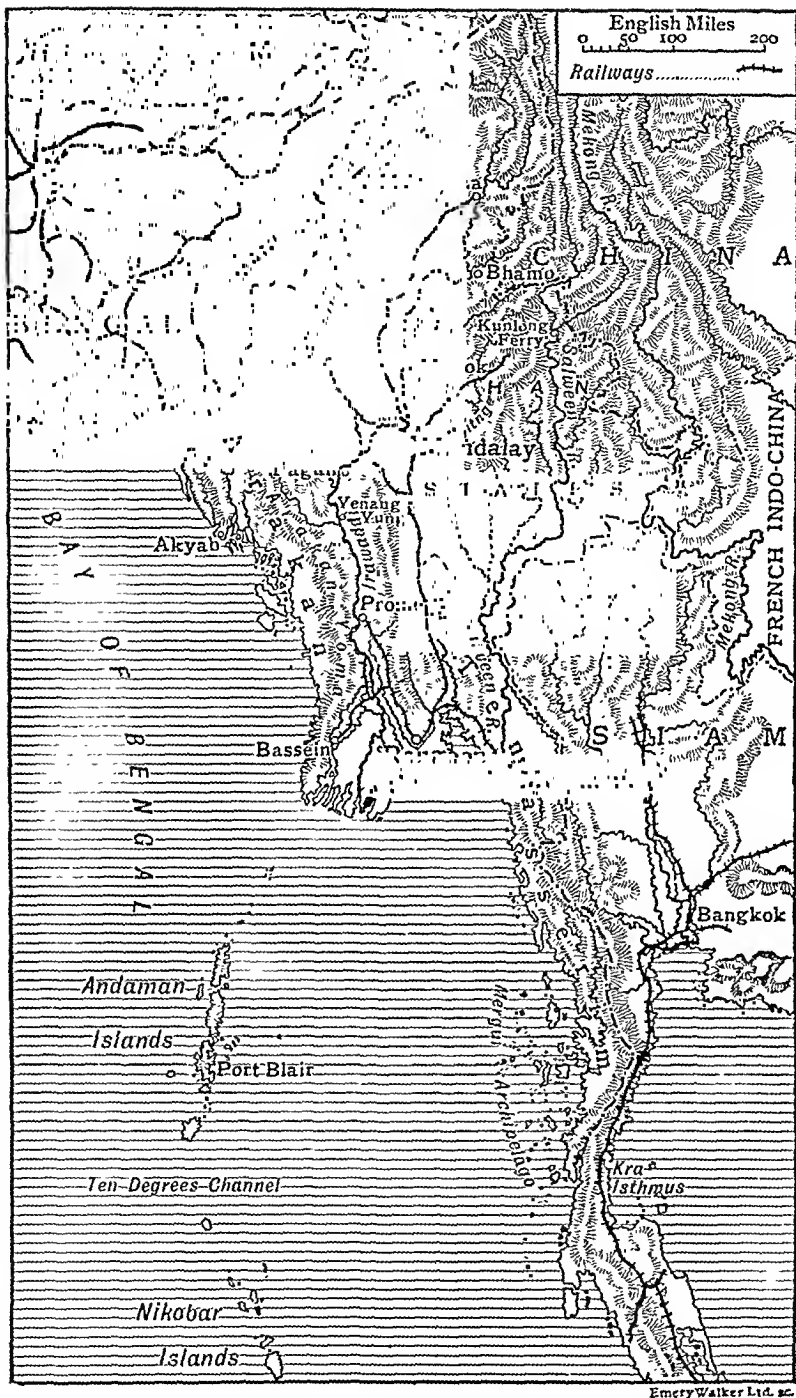


FIG. 34.—ASSAM AND BURMA.

staple food ; it is produced in abundance in both valleys, and can readily be imported from the deltaic regions of Lower Burma.

Plucking is done by hand when the shrub is about three years old and three feet in height. If the shrub gets frequent showers... it recovers quickly from the shock and fresh leaves are ready to be plucked in about two months. In Assam, wherever labour is abundant, the pluckings are continued weekly.

Assam tea is superior to Chinese teas, being also freer from adulteration. The chief markets are the United Kingdom and Russia. The prohibition in 1914 of vodka drinking in the latter country led to an increased consumption of tea, while recent heavy taxation of alcoholic liquors in Britain is having the same effect.

Towns and communications. The Brahmaputra is navigable to Gauhati and by smaller craft to Dibrugarh. A railway from Chittagong port to the latter town traverses the tea and rice districts of the Surma and Brahmaputra valleys ; a branch to Gauhati connects up with the Eastern Bengal Railway from Calcutta. There is a difficult route to Burma through the independent Manipur State. Assam has few towns and none of any size. Shillong, on the Khasi Hills, is a sanatorium and the political headquarters ; it was nearly destroyed by earthquake in 1897. Gauhati is a distributing and collecting centre. Sylhet and Sibsagar are the centres of tea districts.

BURMA.

Relief. The country lies within a horse-shoe girdle of high and, for the most part, densely forested mountains. On the west the Patkoi-Naga-Arakan Yoma ranges effectually shut off Assam, leaving, however, at its seaward end a narrow passage to the coastal strip of Arakan ; the Andaman and Nicobar islands are a sunken continuation of this range. The eastern mountain system is broader, and encloses in its central portion the plateaux and downs of the Shan States. These frontier uplands, split by the Salween river, merge into

the plateau lands of Siam and Yunnan. The frontier follows no natural feature except in the south where the uplands between the Salwen and Mekong rivers narrow down to the Tenasserim coast range.

The interior consists of the Irawaddi valley, over 1000 miles in length; in it and on the deltaic plains at its mouth the bulk of the population are found.

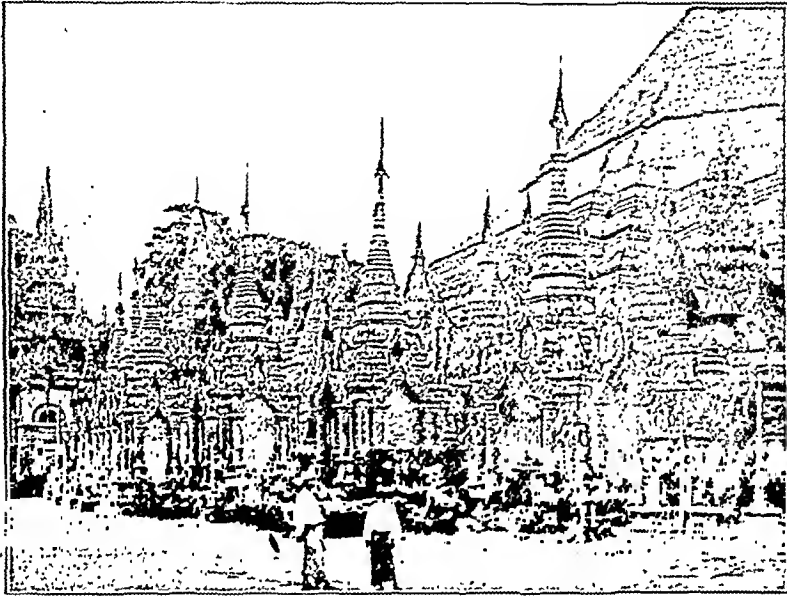


FIG. 55.—SHWE DAGON PAGODA, RANGOON.

Climate and products. Lying almost wholly within the tropics, the low-lying coastal strips, deltaic plains, and river valleys have a temperature ranging between 90° F. and 75° F. On the plateaux of the Shan States the temperature oscillates slightly from spring conditions. The *s.w. Monsoon* brings a heavy rainfall (80 in.) to the western (windward) slopes of the Arakan and Tenasserim ranges and to the delta. The undulating lowlands of the middle Irawaddi and adjoining valleys from Prome nearly to Bhamo lie in a rainshadow. The natural vegetation of this, the *dry-zone* of Burma, is of the savannah type, trees being rare; the forests immediately

adjoining are teak. The Shan States are mixed forest and grass-lands. North of Mandalay the general level rises and the increased rainfall is shown by the prevalence of forest. The winter monsoon is dry.

Communication. The country is little developed, and roads are scarce. Transport is effected by elephants, oxen and human porters. A railway runs from Rangoon to Prome on the Irawaddi, with a branch to Bassein; another from Rangoon follows the Sittang valley, crosses the divide to Mandalay and terminates at Myitkyina 150 miles beyond Bhamo. A branch follows the Myinge valley to the frontier town Kunlong Ferry on the Salwen—an old trading route to China; it is not quite completed (1932).

The chief artery of traffic, however, is the Irawaddi, navigable from its eastern mouth, the Rangoon river, to Bhamo (900 miles). A constant stream of boats of all sizes, from steamers 300 ft. long to the characteristic native junk, ply to and fro; many steamers are travelling bazaars, and at each landing-stage considerable exchange trade is done. Huge rafts of timber float down stream to sawmills at Rangoon; it is to the easy and cheap transport facilities offered by the river that the country's huge timber exports are due. The Chindwin is too swift for easy navigation, but is useful to float logs. Neither the Sittang nor the Salwen is navigable; the former is rendered useless by a tidal bore 10 to 20 feet high, which, in addition, has caused sandbanks in the river; the latter is rendered useless by rapids where it leaves the Shan States.

Natural divisions. There are three natural divisions.

1. **Coastal strip.** This wet, narrow area produces rice and a few tropical products such as tobacco and spices. Coal and wulfram mines have recently been opened in Tenasserim. The Mergui Archipelago is densely forested; rare minerals, e.g. wulfram, are mined, and rubber plantations are being opened up. Moulmein, at the mouth of the Salwen, and Akyab are the chief ports.

2. **Shan states.** This area centres round the middle Salwen.

It consists of rolling grassy downs and forested ranges, separated by deep trench-like river-valleys across which passage eastward is very difficult. The Shan tribes, whose territories are now included in Burma, are the western portion of a race that spreads widely through Yunnan and Siam; they inhabit the valleys and cultivate such crops as rice and wheat.

The Shan country is rich in minerals: lead and silver have long been mined, and there are valuable deposits of iron and

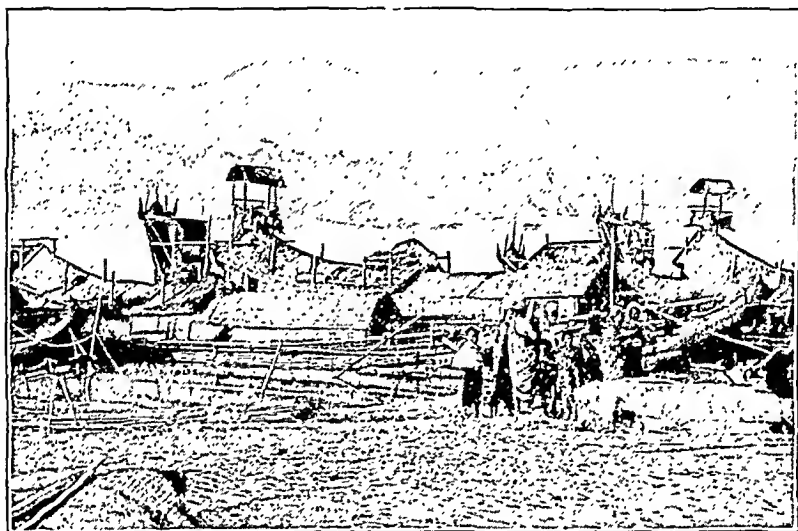


FIG. 56.—BOATS ON THE IRAWADDI.

of the rarer metals, wulfram and tungsten. Now that settled government is assured, it is likely that the future will see an enormous development of this mineral wealth, for the climate is ideal for Europeans and for temperate cereals.

3. *Irawaddi Basin.* Teak is dragged by elephants and floated down tributaries to the main stream, otherwise activities are mainly confined to the narrow flood plain. In the wet season the river rises 35 to 40 ft. at Prome, 200 miles from the sea, and the river is liable to overflow its banks as far inland as Katha, 150 miles above Mandalay. Rice is cultivated everywhere on the flooded land—upstream for

home consumption, at the head of the delta for export. The houses are built on piles; in some districts the people take to the hills in the flood season. Cotton, of fine quality and long staple, is grown in the dry zone. Rubies are obtained from the famous mines at Mogok, above Mandalay, and petroleum from Yenang-yung.

Mandalay (138), standing two miles from the river, is at the crossing of routes and was the capital of King Thibaw's country (Upper Burma) when he was deposed by the British in 1885. Pagan is the site of an old capital. Rangoon (293), on the tidal estuary, has rice and timber mills and oil refineries, its trade in each of these commodities exceeding that of any other Indian port. It is the headquarters of the Buddhist faith, and contains the famous Shwe Dagon Pagoda. It is a modern city with a population of over quarter of a million. Bassein is a smaller port on the unnavigable western distributary. The lower part of the Irawaddi delta is swamp and jungle, and uninhabited; by embanking the left bank of the river it is hoped to win 500,000 acres for rice cultivation.

EXERCISES.

1. Discuss the suitability of Assam for the development of the tea industry.
2. Illustrate in as many ways as you can the part played by the Irawaddi in the life of the Burmese.
3. State, and account for, the industries of Rangoon.
4. Write a short note on the Shan States.
5. Describe what you would expect to see in a journey up the Irawaddi to Mandalay.
6. Draw a sketch map of Assam and Burma, inserting areas under tea, cotton, rice. Insert and name the chief river of each province and three important towns. Insert two ports.

LESSON XVII.

ISLANDS IN THE INDIAN OCEAN.

1. ANNUAL RAINFALL AT COLOMBO AND TRINCOMALI.

Month.	Colombo.		Trincomali.	
	Ins.	Days.	Ins.	Days.
January - -	3.0	6	6.2	10
February - -	1.7	4	2.4	3
March - - -	5.5	9	1.3	4
April - - -	8.8	13	1.6	4
May - - -	13.2	20	2.2	6
June - - -	8.2	17	1.9	4
July - - -	5.5	12	2.2	2
August - - -	4.5	13	4.2	9
September - -	4.9	14	4.6	7
October - - -	12.9	21	8.9	16
November - - -	12.7	17	13.1	19
December - - -	6.4	13	13.2	20
Total - - -	87.3	159	61.8	104

(a) Plot curves, on the same squared paper, to represent the annual rainfall at Colombo and Trincomali.

(b) Compare them with the curves for Bombay and Madras respectively.

(c) Name the driest three consecutive months at each place in the above table (by reference to number of days).

(d) Account for the differences in rainfall distribution at each of the above places.

(e) Explain, by reference to the curve or otherwise, why the western side of the island is more generally cultivated than the eastern.

2. Colombo is 16 days by steamer from London. Calculate from your atlas (a) distance from Colombo to London, (b) average day's steaming.

3. CROP STATISTICS FOR CEYLON.

Crop.	(i) 1,000 acres.	(ii) Exports. £ millions.
Coconuts, etc. - -	900	5
Rice - - - -	800	—
Tea - - - -	450	15
Rubber - - - -	500	7
Cinnamon - - - -	25	·3
Cacao - - - -	30	·3
Tobacco - - - -	13	—
Coffee - - - -	1	—
Other crops - - - -	400	—
Pasture land - - - -	600	—
Total—Crops and pasture Area of Ceylon - - -	3,720 16,308	33

(a) Express column (ii) diagrammatically by means of rectangles ($\frac{1}{2}$ in. base).

(b) Account for the absence of rice exports (see imports).

(c) Deduce, from a consideration of the import and export table, whether rice is as profitable to grow as either tea, rubber or coconuts.

4. IMPORTS OF CEYLON.

Article.	£1,000,000.	By Countries.	Percentage.
Rice - - - -	7·5	India - - -	40
Cottons - - - -	2·0	United Kingdom -	23
Coal and Coke - -	1·3	Straits Settlements -	9
Sugar - - - -	1·2	Other Countries -	28
Oil - - - -	1·0		
Total - - - -	32	Total - - -	100

(a) What do the figures respecting the crop acreage and import of rice tell you about Ceylon?

(b) From which of the countries mentioned in the table will the rice come?

(c) Which imports will come from Britain?

Ceylon. Ceylon constitutes an independent Crown Colony. Geologically, it is a detached portion of India to which it is

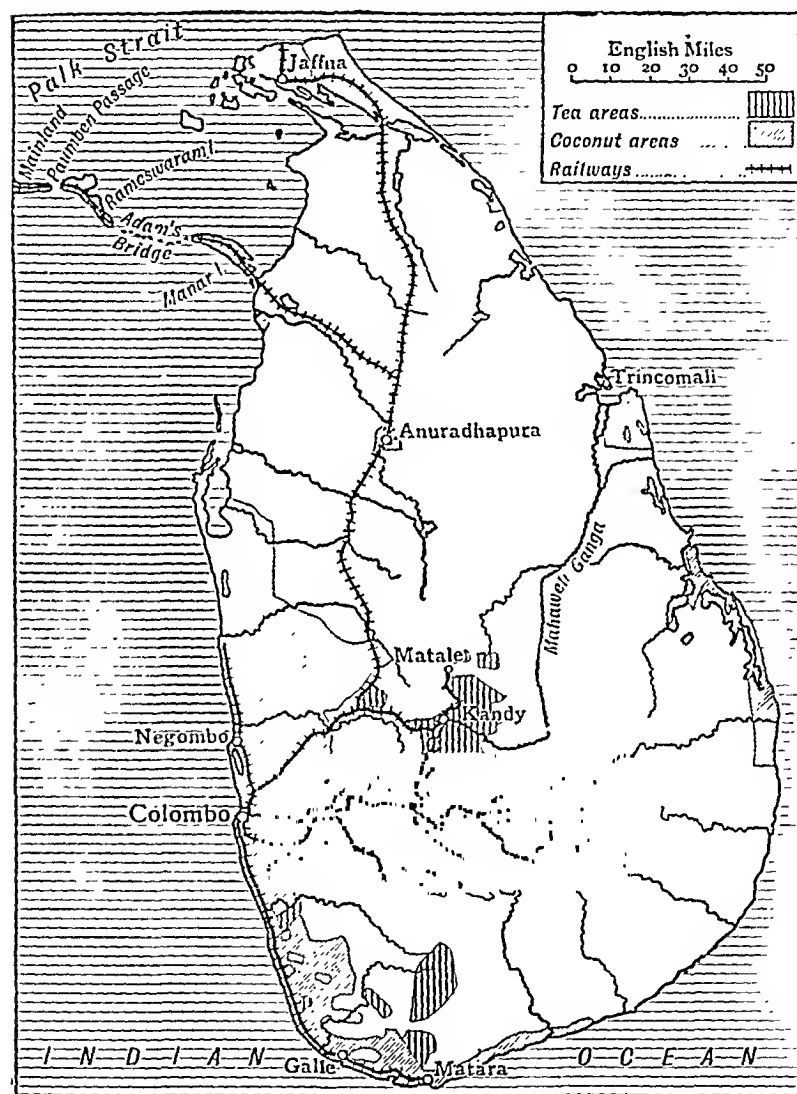


FIG. 57.—CEYLON: PRODUCTS AND RAILWAYS.

joined by Adam's Bridge. This is a low ridge of sand and coral-tipped rock, 22 miles in length, which stretches from

the island of Manar on the Ceylon coast to the island of Rameswaram on the coast of India. At high tide the ridge is, in some places, covered to a depth of four feet. Passage from the Gulf of Manar to Palk Strait is confined to the narrow channels between the two aforementioned islands and the respective mainlands; of these, the Paumben Passage can be navigated by small coasters drawing 6 feet, and is the more commonly used. A Ceylon railway has been carried across Manar island, and its projected extension to India across the reef has already been surveyed.

Relief. The island is mountainous in the centre, the hills increasing in breadth and altitude southwards. The highest peak is Pedrotallagalla (8000 ft.), but Adam's Peak (7000 ft.), an isolated peak in the south-west of the central mass, is much the more famous and a familiar landmark to all who navigate the south-western shores. Thousands of devout Sinhalese pilgrims climb every year to its summit to lay their offerings before the Footprint of Buddha, left on its topmost crag; by the Mohammedans the footprint is ascribed to Adam.

A characteristic feature of the scenery is the number of deep ravine-like river valleys carved out by rushing, swollen rivers during the monsoon rains. Only one river, the Mahaweli Ganga, is at all navigable, small boats being able to ascend to Kandy.

Climate. The island enjoys a remarkably uniform climate. The temperature varies only in a vertical direction; along the coastal plain the annual range is everywhere only 2 or 3 degrees F. Being mountainous, the island receives heavy rains from both monsoons. The east coast, like that of Madras, has winter rains; the south-west receives moisture from both monsoons—the winds in winter being almost due north at Colombo. The flat northern and north-western portion of the island receives comparatively little rain (25 in.).

Products and towns. Every kind of tropical product flourishes in Ceylon, and agriculture is the chief industry of the people. The draught animal is the native buffalo. Until the last thirty or forty years the products were confined

almost entirely to such essential foods as rice, coco-nuts, palms and spices. Judging by the number and size of the ruined reservoirs and irrigation works found there, the northern part of the island must at one time have supported a dense population. Buried in the jungle at Anuradhapura are the

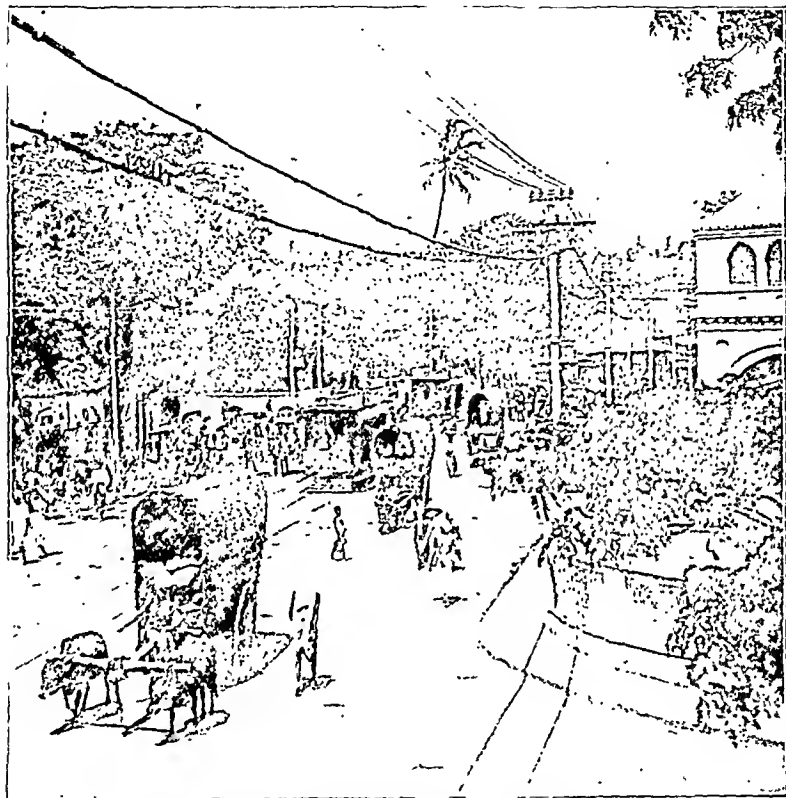


FIG. 58.—STREET SCENE IN COLOMBO.
Notice the different kinds of conveyances.

remains of a city which is computed to have covered at one time over 250 square miles. Efforts are now being made by the British to restore these irrigation works, long since wrecked through tribal feuds.

The last fifty years have witnessed a remarkable development of the resources of the island—chiefly through British

tea plants, the latter being the most important product of the island. Terraced tea plantations are found at all elevations up to 6000 ft., the bushes being pruned down to a flat spreading head, two feet high (Fig. 60).



FIG. 60.—TEA PLUCKERS AT WORK IN CEYLON.

Notice the height and shape of the bushes and the slope of the land. The pluckers throw the leaves over their shoulders into the basket. When the overseer rings his bell they take their load to him to be weighed.

More profitable products than tea are coconuts and rubber, the areas under which are rapidly increasing. The rubber is grown in the south-west and centre—especially in the Matale and Kelani valleys—the labourers on the estates being largely Tamils from southern India. Cinnamon, once grown extensively on the white sands round Negombo, is now being displaced by coconuts—a much less troublesome crop.

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There are widely spread deposits of useful and valuable minerals, but only plumbago is mined to any large extent. Sapphires, rubies and other precious stones abound, especially in the Matara district.

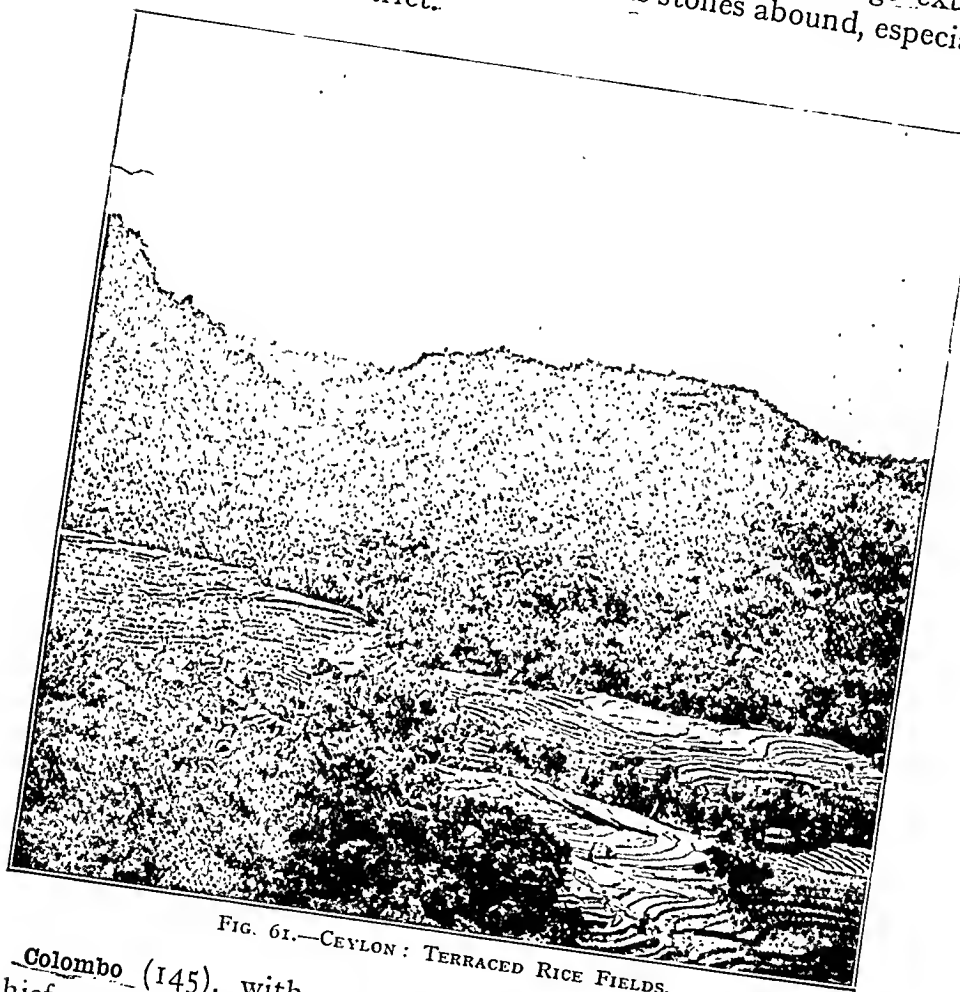


FIG. 61.—CEYLON: TERRACED RICE FIELDS.

Colombo (145), with a modern artificial harbour, is the chief port along the western, lagoon-studded coast, and the most important town in the island. Standing on the steamer routes through the Red Sea to Australia, East Indies, Malay Peninsula and eastern Asia it has, through its position, far outstripped Trincomali on the opposite coast, in spite of the latter's magnificent harbour, which is capable, it is said, of holding all the navies of the world. In addition to being

the political capital, Colombo has become the chief commercial centre, due to the richness of its immediate hinterland and to the fact that over sixty per cent. of Ceylon's products go westward to Europe.

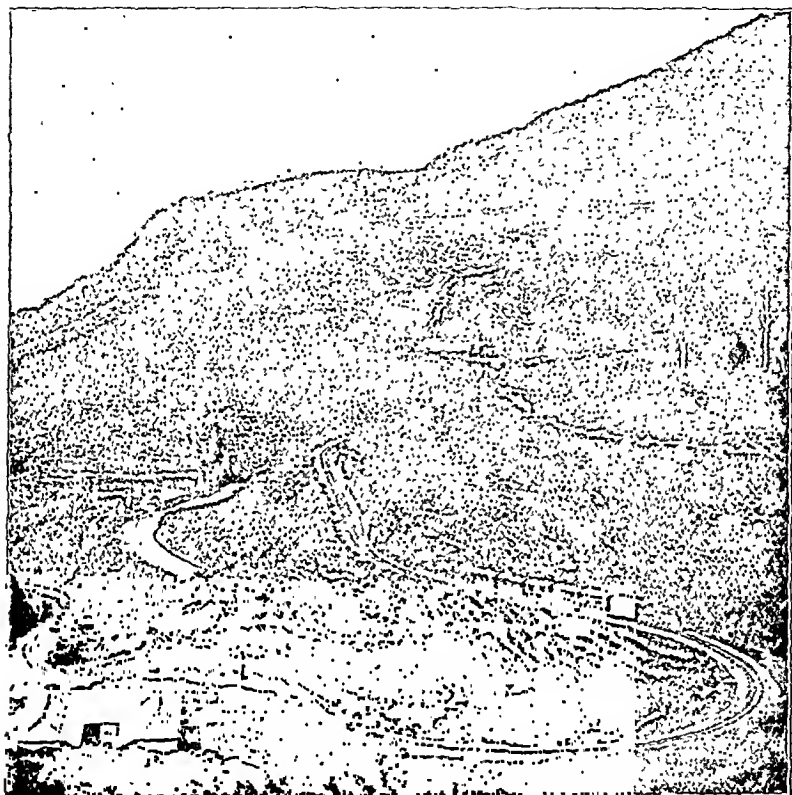


FIG. 62.—THE NUWARA ELIYA RAILWAY, WINNING UPWARDS THROUGH
TEA PLANTATIONS.

Kandy, the old capital, is beautifully situated in an elevated valley (2000 ft.) surrounded by lofty wooded hills, and is the "Simla" of Ceylon. Nuwara Eliya, at the foot of Pedro-tāllagalla, is another hill station. The old Dutch port of Galle at the extreme south of the island has a small harbour, and has lost much trade to Colombo; its importance is now reviving with the opening up of its hinterland.

Laccadive Islands. This is a group of low coral islands situated about 200 miles from the west coast of India. The chief product is coir, which is soaked in the lagoons surrounding each island. The islands, of which there are fourteen principal, belong politically to Madras, and are inhabited by about 10,000 people, mostly of Arab descent.

Maldiv Islands. This group is also of coral formation: it consists of many thousand small islands and about thirteen principal—the largest being scarcely a mile square. The population of 50,000—mostly of Arab descent—are expert fishermen and navigators. The islands are nominally subject to Ceylon, to whom the Sultan pays yearly tribute. The products are tortoise-shell, cowrie shells, dried fish and the products of the coconut.

The Andamans. These consist chiefly of three narrow, mountainous islands—North, Middle and South Andaman—covered with dense forests of bamboo and other tropical trees. Coconuts, coffee and cacao are produced, but the climate is too unhealthy for Europeans. Besides the natives, a small gentle black race, the population consists of convicts from India, of whom there are from 10,000 to 15,000 on the islands. **Port Blair** (Fig. 54) on South Andaman has a splendid harbour, and exports chiefly paduk, a fine furniture-timber. These islands, together with the Nicobars, are under the rule of the Indian Government.

The Nicobars. These consist of about twenty islands, of which only one, Great Nicobar, is of any size. On the coasts the people are of the Malay stock, but the interior is inhabited by a savage race possessing Mongol features. The climate is extremely unhealthy, and for that reason and the difficulty of approach, owing to strong winds and currents, little is known of the islands. The chief products are coconuts, copra, coir, etc.

EXERCISES.

1. Why is the climate of Ceylon so uniform throughout the year?
2. Write short notes on (a) Adam's Bridge, (b) Adam's Peak.

3. Compare Colombo and Trincomali as regards (a) site for trade, (b) hinterland.

4. Draw a sketch map of the Indian Ocean so as to show the central position of Colombo. Indicate the trade-routes, with distances from Colombo to (1) Suez, (2) Cape Town, (3) Calcutta, (4) Singapore, (5) Albany (W. Australia), (6) Bombay.

LESSON XVIII.

BRITISH MALAYA.

TABLE I. AREAS AND POPULATIONS.

	Area sq. miles.	Population, 1921.
Straits Settlements—		Thousands.
Singapore Island - - -	217	400
Malacca - - - - -	720	124
Penang - - - - -	108	300
Province Wellesley - - -	288	100
Dindings - - - - -	183	7
F.M.S.—		
Perak - - - - -	7,800	600
Selangor - - - - -	3,156	400
Negri Sembilan - - - -	2,550	180
Pahang - - - - -	14,000	150
British Protected Malay State—		
Johore - - - - -	9,000	300
Kedah - - - - -	3,800	246
Perlis - - - - -	300	33
Kelantan - - - - -	5,500	287
Trengganu - - - - -	6,000	154

1. (a) Draw a large scale map of the Malay Peninsula and mark the States. Shade it as follows: (a) 1000 persons and upwards to the sq. mile, cross-hatch; (b) 500-1000, vertical; (c) 100-500, stipple; (d) 0-500, blank.

(b) Account for the dense population in the States having over 500 people to the sq. mile.

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TABLE II. RUBBER STATISTICS.

Production in 1,000 Tons.		Consumption in 1,000 Tons.	
<i>Plantation :</i>		<i>United States of America</i>	
British Malaya -	286	United Kingdom	400
Netherlands, E. Indies -	204	France -	85
Ceylon -	59	Germany -	39
India -	10	Canada -	23
Sarawak -	9	Japan -	20
Other Countries -	17	Australia -	17
Total Plantation -	585		7
<i>Wild :</i>		Total -	
South America -	24		626
Other Countries -	9		
World Output -	618		

TABLE III. WORLD'S TIN OUTPUT.
(1,000 Tons.)

	Malaya.	Bolivia.	Nigeria.	World.
1907 -				
1912 -	48	22	1	93
1917 -	48	23	2	124
1922 -	40	28	6	124
1927 -	35	32	5	118
	52	34	8	154

2. Examine Table II, and then work the following exercises:

(a) Draw a circle (radius 1 in.) and divide it into sectors to represent the percentage share in the world's rubber output (of each of the countries).

(b) Draw a similar circle to represent the percentage consumption share.

(c) What percentage of the world's rubber output is wild rubber?

3. (a) What percentage of the world's tin output comes from British Malaya?

(b) Draw a circle (radius 2 in.) and divide it into sectors to represent the percentage share in the world's tin output from the above countries. Mark the remaining sector *other countries*.

TABLE IV. TRADE OF BRITISH MALAYA.
(Exclusive of inter-Settlement Trade.)

Imports.	Million Dollars.	Exports.	Million Dollars.
Motor spirit - - -	103	Rubber - - -	240
Rice - - -	88	Tin - - -	124
Rubber - - -	42	Motor spirit - - -	83
Tin ore - - -	41	Copra - - -	26
Liquid fuel - - -	26	Rice - - -	23
Iron and manfs. - -	21	Fish - - -	12
Cottons - - -	21	Areca nuts - - -	11
Machinery - - -	14	Pepper - - -	9
Milk - - -	13	Tinned pineapples -	8
Total - - -	\$706 =£82 millions	Total - - -	\$655 =£76 millions

TABLE V. RUBBER ACREAGE.

Federated Malay States - - -	1,140,000 acres.
Straits Settlements - - -	295,000 "
Unfederated Malay States - - -	675,000 "

Total for Malaya - - - 2,110,000 acres.

4. (a) Two-thirds of the trade of the Straits Settlements passes through Singapore, nearly one-third through Penang. Study the above table, and state in general terms the nature of the trade of these two ports.

(b) State an industry of Singapore revealed by the table.

(c) Name imports that are not exported.

(d) How is the excess of rubber export over import to be accounted for?

(e) Which of the imports would probably come from Britain? Name another likely source.

Relief. This peninsula is divided into two portions by the narrow isthmus of Kra; *British Malaya*, with which this lesson deals, lies south of 6° N. Except where it is broken at the Kra isthmus a mountain range traverses the peninsula from end to end, attaining in British Malaya a height of 4000 ft. Here also it broadens out in sympathy with the coast line, along which on all sides it leaves a continuous plain of from 20 to 50 miles in breadth. It is on the western plain that the population is chiefly massed.

Natural products and communications. The temperature is remarkably uniform (78° - 82°), and there is an annual rainfall of 100 inches. The natural vegetation is most profuse; dense forests cover the mountain slopes, and thick jungles the plains, which are rich with the alluvium of centuries.

The central range and the alluvial plains are rich in tin, and gold is mined in the Kuala Lipis district. The other chief products are rubber, coconuts, spices, pineapples, gambier, and rattans.

A railway runs the full length of the western plain, and marks the centre of the agricultural and industrial districts.

The rivers Kuantan and Pahang, both flowing eastward, are navigable by river steamers for long distances, and should play a prominent part in the pending development of the eastern plain.

Political divisions. British Malaya is divided into :

1. **The Colony of the Straits Settlements**, consisting of Singapore (1819), Penang (1786), Province Wellesley (1800), Malacca (1511), and the Dindings (1874). Their affairs are presided over by a Governor, with headquarters at Singapore. The dates of acquisition by Britain are given in brackets. The islands of Labuan (off N.W. Borneo), Cocos Keeling (off S.W. Sumatra), and Christmas (off S.W. Java), are included in the Straits Settlements.

2. **The Federated Malay States**, consisting of Perak, Selangor, Negri Sembilan, Pahang. The seat of government is Kuala Lumpur, where the Chief Secretary directs affairs as a



FIG. 63.—MALAY PENINSULA.

subordinate of the Governor of the Straits Settlements. Each State is ruled by a Sultan aided by a British Resident (cf. Native States of India), and in addition there is a Federal Council of representatives of all the States. Under this regime an excellent system of roads and railways has been constructed, as well as several deep-water ports—Port Swettenham, Port Weld and Port Dickson.



By courtesy of the F.M.S. Devt. Agency,

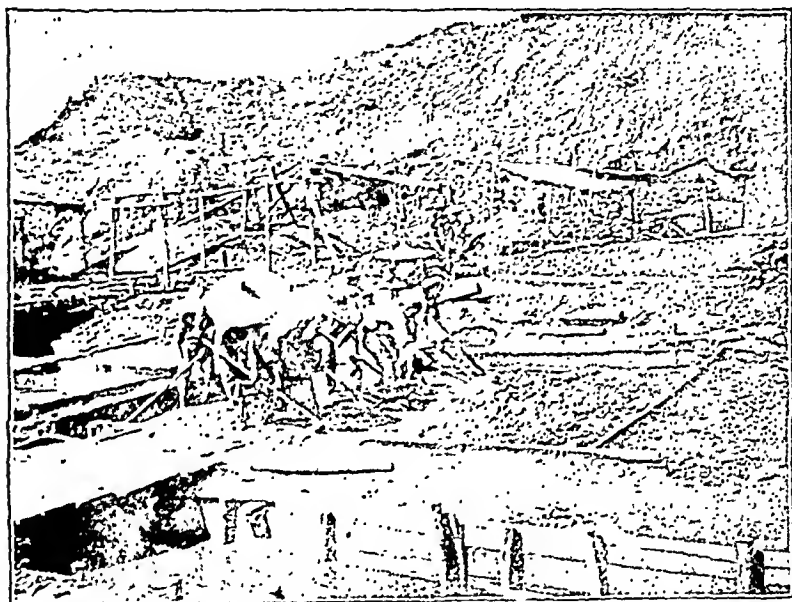
FIG. 64.—PREPARATION OF RATTANS IN MALACCA.

The canes are being straightened by bending round posts. Note the bundle of canes in the centre of figure.

3. **Independent Native States**, five in number, namely: Johore, Trengganu, Kelantan, Kedah, and Perlis, all under British suzerainty. A British Adviser resides at each court to direct the foreign policy, but takes no part in internal affairs. These States, although only slightly under British influence, have followed closely the example set in the advised Federated Malay States.

History. Lying on the direct route between India and the Far East, the Malay Peninsula early attracted the notice of

European seafaring nations. First the Portuguese (sixteenth century), and then the Dutch (seventeenth century) arrived, but they did nothing to develop the resources of the land, being content merely to establish trading stations at Malacca and other places along the western shore. This policy was followed by the British, who ousted the Dutch in 1825, and established the colony of the Straits Settlements



By courtesy of the F.M.S. Dept. Agency.

FIG. 65.—CHINESE COOLIES PUDDLING TIN ORE.

The ore, being light, settles at the upper end of the vat, the heavier matter settles at the lower end. Note sun hats.

in the following year. It was not, however, till 1871 that the British interfered in the internal affairs of the peninsula by establishing the Federated Malay States under British control. This regime put an end to the state of chaos which had followed on the steady inflow of Chinese miners to work the tin mines. In 1909 Siam transferred to Britain her suzerainty over the remaining States—mentioned in group 3 above.

Tin-Mining. Tin has been for many years the chief product of the peninsula, although now threatened soon to be

surpassed by rubber. Nine-tenths of the present output is obtained from the alluvial deposits of the western coastal plain, whither it has been washed from the central mountain range. From time immemorial the industry has been in the hands of Chinese, working by leisurely and old-fashioned methods, but the rise in the price of tin during the last twenty years (£60 to £180 per ton), consequent upon the development of

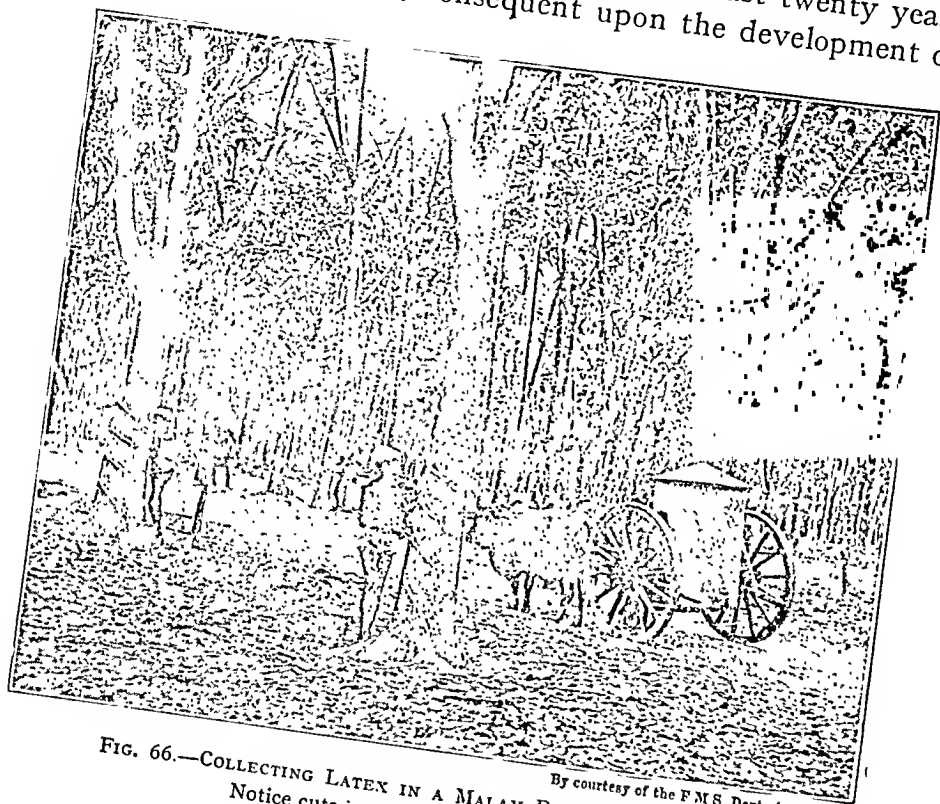


FIG. 66.—COLLECTING LATEX IN A MALAY RUBBER PLANTATION.
Notice cuts in trees made by tappers.

By courtesy of the F.M.S. Devt. Agency.

the canning industry (meat, fruit and fish), has attracted European capital and methods, and the output has almost doubled.

To-day British Malaya produces half the world's supply of tin, the labour employed being almost entirely Chinese (215,000). The chief tin-mining districts (Fig. 63) are :
Kinta Valley in Perak (Gopeng, Tronoh, Ipoh),
Klang Valley in Selangor (near Kuala Lumpur),

Seremban in Negri Sembilan, and at
Kuala Kuantan in Pahang.

There are signs of approaching exhaustion on the western coast, but as yet the eastern alluvial deposits have been little worked.

Method of mining, etc. The earth is first removed from above the tin-bearing alluvium. Water, brought in pipes from the uplands, is then used to break up and undermine the alluvium, either by gravitation or by pressure jets. The material is washed down to sloping puddling vats, where the light tin ore is separated by Chinamen from the heavier matter, which settles at the lower end of the vat (Fig. 65).

Rubber industry. Until about thirty years ago the world's supply of rubber came from the forests of the Congo and Amazon basins, where it was obtained from wild rubber trees through the aid, in many instances, of slave labour. The rapid growth in quite recent years of the motor and electrical industries created a demand for rubber that these haphazard methods could not satisfy, and British capitalists were encouraged to plant thousands of acres of rubber trees in British Malaya, where the climate is similarly hot and moist. The trees planted were of the genus *hevea Braziliensis*, found wild in the Amazon forests.

Method of culture, etc. The rubber trees are grown in nurseries, and when about 6 feet high are planted out in the

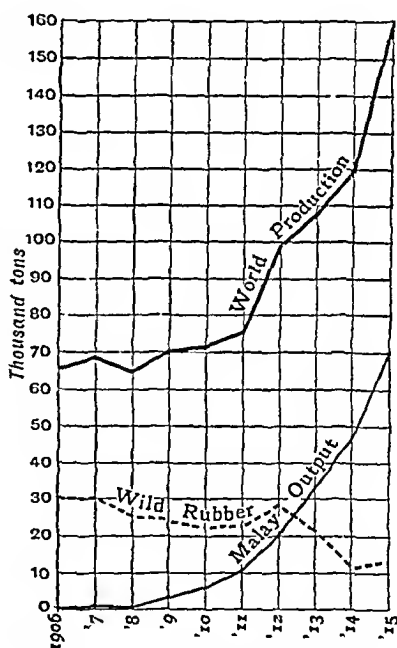



FIG. 67.—CURVE ILLUSTRATING RUBBER OUTPUT, 1906-15.

cleared jungle-land about 22 feet apart; there are thus about 100 trees to the acre. Tapping is begun about the end of the fifth year, by which time the trees are about 40 feet high and have a diameter of 6 to 7 inches at 3 ft. from the ground. There are several methods of tapping, the herring-bone method  being perhaps the most usual.

Cuts are made in the bark so as not to reach the wood, and the white latex, which flows down the cut, is caught in a cup. After being coagulated by acids it is washed and pressed by machinery and packed for export.

The labourers are imported from Southern India, Java and China. **Catch crops** of coffee, tapioca and pepper are grown in the earlier years, and abandoned when the rubber nears the tapping stage.

Coco-nut industry. Extensive plantations of coco-nut palms have been made in British Malaya in recent years owing to the growing demand for coco-nut oil in the manufacture of margarine, soap, candles, etc. The peninsula possesses all the conditions for successful coco-nut cultivation, viz. (a) alluvial flats near streams, (b) high uniform temperature, (c) heavy, well-distributed rains, (d) constant breezes, and (e) a long 1000-mile coast-line. The last-named is important, as the palm thrives best in a briny atmosphere; the plantations, however, are scattered all over the coastal plains and even to a height of 1000 feet on the central range.

The coco-nut palm commonly planted yields nuts at the end of the sixth year, but is not in full bearing until the tenth, when about eighty nuts per tree are obtained. Forty trees are planted to the acre, but recently a much smaller variety of palm, yielding nuts in the fourth year, has been introduced, of which there are about 100 to the acre.

In addition to **coco-nut oil**, which is obtained by crushing the sun-dried kernel, the nut yields many other products. From the **coir fibre** of the husk are made ropes, matting, brushes and bristles, while the dried kernel (**copra**) yields, after being crushed, an excellent food called **poonac**.

Towns. Singapore, on Singapore island, has an excellent roadstead in which literally thousands of coasting ships can take anchor while waiting to unload at the long line of free quays; ocean liners lie at anchor in Keppel Harbour (Fig. 63).

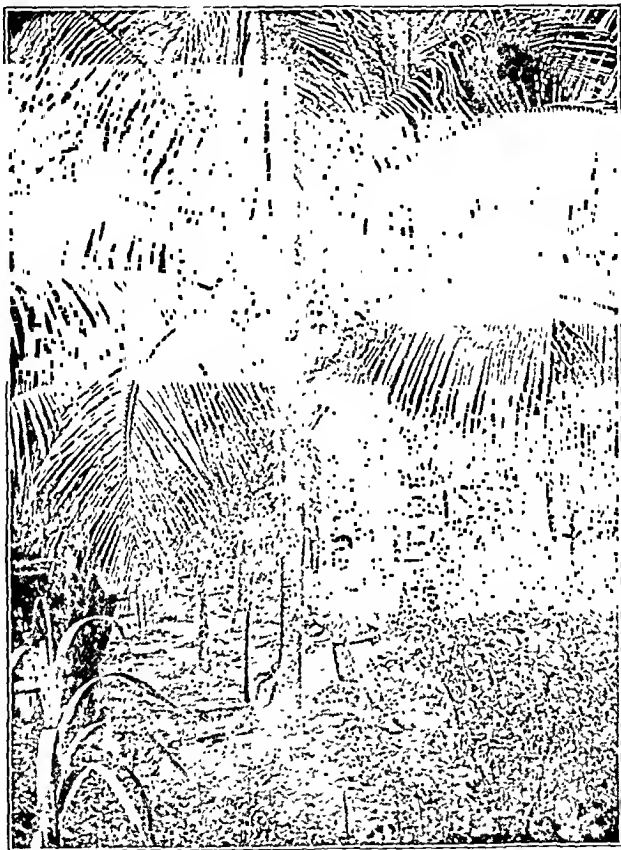


FIG. 68.—A COCO-NUT PALM.

Note the beautiful fronds—also the fruit.

The town is strongly fortified, and, in addition to preparing goods for shipment (cacao, sago, etc.) smelts a considerable amount of tin ore. Situated midway between Europe and the Far East, between India and Australia, between the Indian Ocean and the Pacific, it has become one of the

greatest *entrepôts* in the world. Coal is near in the island of Labuan.

Penang (Georgetown), the second port, is connected by steam ferry to Prai on the railway to Singapore. Its chief exports are rubber and tin, tin smelting being an important industry. Port Weld, Teluk Anson, and Port Swettenham are newly established ports, shipping rubber and tin.

Malacca Town, the oldest port, has a poor harbour and has now little trade.

Kuala Lumpur, the capital of the Federated Malay States, is a handsome, well-built town.

EXERCISES.

1. What is meant by an *entrepôt*? Mention three *entrepôts*, and indicate in what respects their sites agree.

2. Say what you know about Singapore under the following heads: (a) World position, (b) Goods imported, (c) Facilities for conducting trade. Illustrate by a sketch map.

3. Summarise the products of British Malaya, and point out, by reference to the tables and in other ways, the importance of the area to Britain.

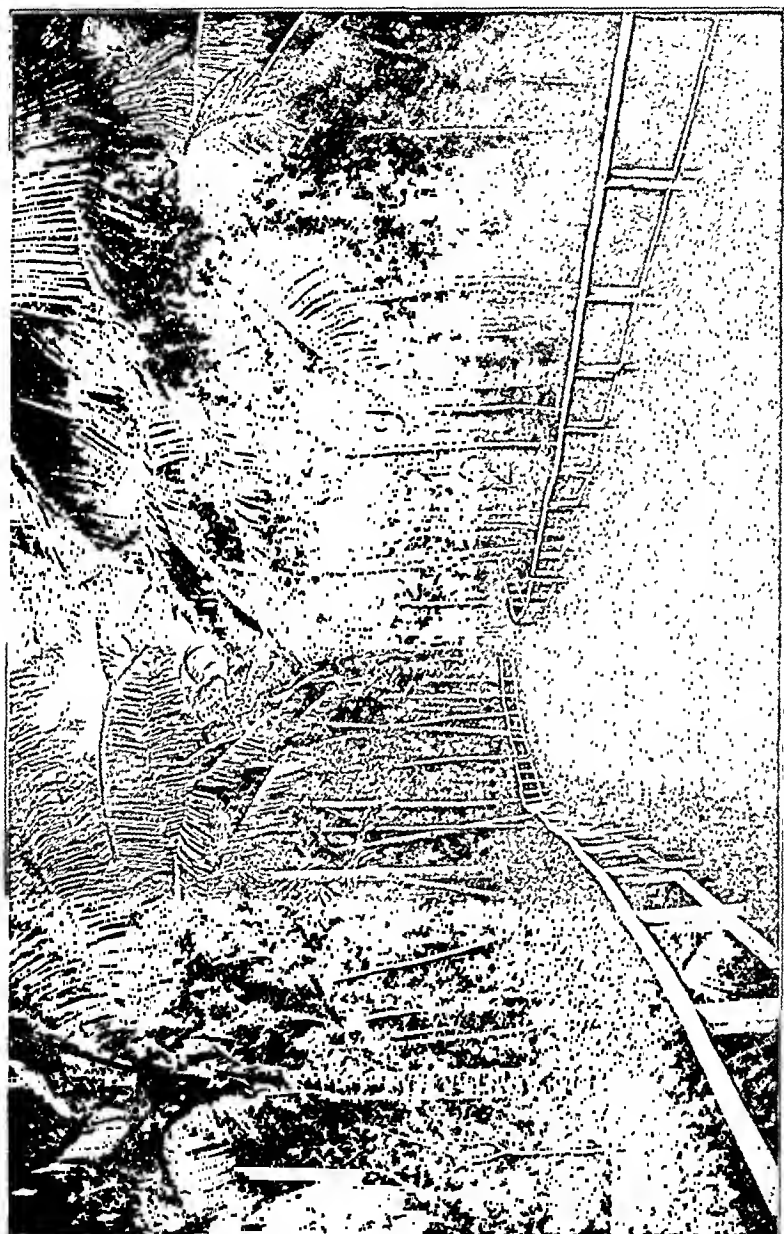
4. With regard to British Malaya, point out in what respects its systems of Government resemble those of India.

5. Discuss rubber under the following heads: (a) climatic conditions for growth, (b) sources of supply.

6. Why is the Malay Peninsula so well adapted for coco-nut cultivation? Mention the various products obtained from the coco-nut palm.

7. What recent industrial developments have led to a big increase in the demand for (a) rubber, (b) tin?

8. Draw a sketch map to illustrate the position of Singapore as the "Halfway House" of the East. Indicate, as far as possible, the nature of the goods travelling along each route.



By courtesy of the F.M.S. Development Agency
FIG. 69.—ROAD THROUGH A COCO-NUT PLANTATION IN THE FEDERATED MALAY STATES.

LESSON XIX.

THE EAST INDIES OR MALAY ARCHIPELAGO.

1. Draw a section along the equator from Long. 95° E. to Long. 135° E., horizontal scale twice that of the map, vertical scale 1 in. = 6000 ft.

2. Assuming that the altitude of the sun increases 1° in four days, calculate the total yearly period that the sun is overhead in the Malay Archipelago.

3. What is the mid-day altitude of the sun at Batavia on June 21, Mar. 21, Dec. 21?

4. Assuming that the rainy period sets in about a month after the sun is in the zenith, calculate the approximate dates at which the rainy periods will commence at Batavia, Pontianak, Manila.

Extent and divisions. The Malay Archipelago is held to include all the islands that dot the ocean between S.E. Asia and Australia from meridian 95° E. eastward to meridian 135° E. With the exception of the Philippines, they lie within ten degrees of the equator, are inhabited largely by Malays, and belong almost entirely to Holland. The Philippines are ruled by the United States, while N.W. Borneo and part of Timor belong to Britain and Portugal respectively.

Natural divisions. Physically the islands can be divided into two archipelagoes by a line drawn between the islands of Bali and Lombok and thence through the Macassar Strait to the south of the Philippines. West and north of that line the intervening seas and straits are shallow (under 50 fathoms), so that the islands stand on a continental shelf, on each side of which the ocean floor sinks sharply to great depths. Of this group Sumatra, Java and Borneo are the largest, and from the last-named two submarine ridges stretch to the Philippines, which mark the eastern limit of the shelf. To the south and east of the dividing line the islands are set in deeper water, which shallows only as the shores of Australia

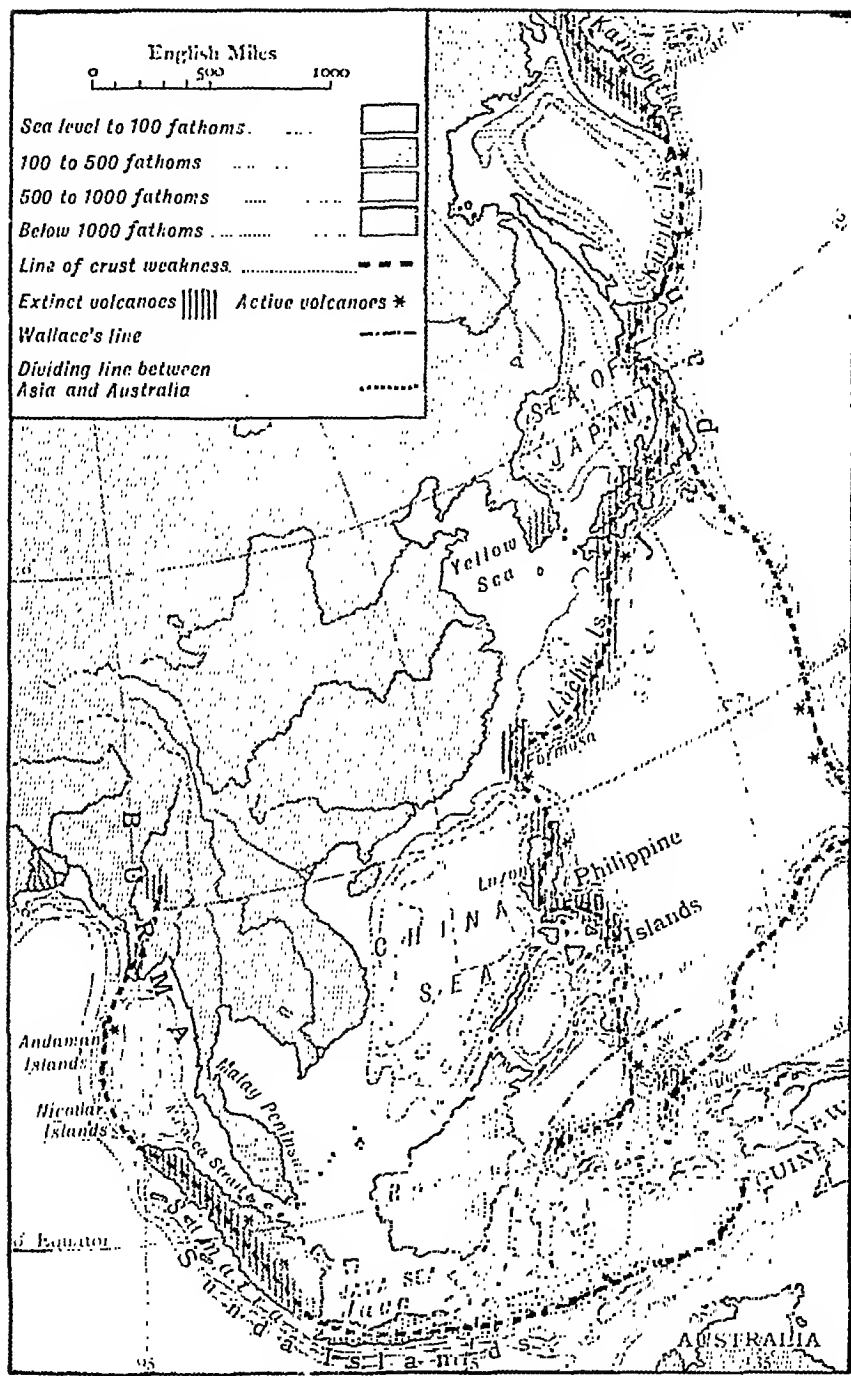


FIG. 70.—EAST INDIA AND EASTERN ASIA—PHYSICAL.

are approached. If the sea-bed between the two continents were raised 600 ft. the islands on the Asiatic side of the line would become part of that continent, while those on the Australian side would still be surrounded by deep water.

The line marking the edge of the continental shelf is known as **Wallace's Line**, from the fact that the great naturalist of that name was the first to point it out. On examining the flora and fauna of the archipelago, Wallace found that on the Asiatic side of the line they were typically Asiatic, while on the other side, with the exception of Celebes, they were typically Australian. The following tables summarise his observations :

	Asiatic Side.	Australian Side.
<i>Trees</i> -	Bamboos, palms.	Eucalyptus and other gum trees.
<i>Animals</i> -	Monkey, tiger, rhinoceros.	Kangaroo, wombat.
<i>Birds</i> -	Wood peckers, pheasants.	Cockatoos, cassowaries.

Celebes has a fauna and flora showing a distant affinity to those of Asia.

Two conclusions can be drawn from Wallace's observations:

1. That the islands of each group were once joined to the adjacent continent, from which they were subsequently separated by subsidence.

2. That the two continents have for long ages been separated by deep water following a line between Bali and Lombok and thence east of Celebes through the Molucca Passage; and in more recent times by deep water to the west of Celebes—along Wallace's Line.

Structure. Further evidence of the crust weakness that brought about the submergence of these lands is afforded by the numerous active and extinct volcanoes found throughout the archipelago, and by the deep volcanic deposits by which many of the islands are covered.

Fig. 70 shows the position of the present active volcanoes. They trace out the old shore-lines of both continents.

Climate. Sumatra and Borneo are bisected by the equator, while, with the exception of the Philippines, all the islands lie within 10° of that line. The temperature is, accordingly, uniformly high, but is modified :

1. By the surrounding ocean, which varies little in temperature throughout the year.

2. By the height of the land, for all the large islands and most of the small ones are extremely mountainous.

3. By the monsoon rains and the accompanying screen of clouds.

4. By the prevalence of strong sea-breezes.

Batavia (lat. 6°) has a maximum temperature of 79.5° F. and the annual range is only 2° F.

There are two distinct rainy seasons, corresponding with the passage of the vertical sun, the rainy period setting in about a month after the sun is in the zenith.

Soil and vegetation. The original rocks of the archipelago were to a large extent limestone and chalk, over which have been deposited volcanic mud and lavas. The resulting soil is rich in potash and lime—both excellent plant foods. The vegetation, under such conditions of soil, temperature and rainfall, is most luxuriant. The following crops are cultivated—all requiring much heat and moisture.

Product.	Islands.	Conditions of Culture, etc.
Rubber - -	Java, Sumatra, Borneo.	Moist heat, vegetable refuse in soil, in undulating well drained lowlands.
Coffee - -	Java.	Frequently interplanted with rubber, usually at higher elevations.
Sugar-cane -	Java, British Borneo.	Potash soils, low-lying land, capable of irrigation.
Tobacco - -	E. Sumatra, E. Java.	Porous, potash and lime soils—volcanic silts are good.
Coco-nut palms -	E. Sumatra.	Alluvial flats along coast.
Spices (cloves, nutmegs, pepper)	Moluccas, Borneo.	Great heat and moisture.

EXERCISES.

1. How and why does the seasonal distribution of rainfall at the equator differ from that at the Tropics ?
2. What evidences are there in S.E. Asia of crust weakness ?
3. Write a short essay about Wallace's Line.
4. On a sketch map of the East Indies draw Wallace's Line, and indicate, as far as you can on the map, what has been said above about the vegetation, etc., of the areas separated by it.
5. Draw a sketch map of the East Indies, indicating the countries to which the various islands belong (use colours).

LESSON XX.

JAVA, SUMATRA AND BORNEO.

TABLE I. AREA AND POPULATION.

Country.	Area.	Population.
England (without Wales) - -	50,874 sq. mls.	35,000,000
Java - - - - -	50,554 „	30,098,000
Sumatra and adjoining islands -	184,222 „	6,000,000

1. (a) Attempt to account for the great density of population in Java by reference to the exports and crop acreage.
(b) Why is the density of population in England so high ?

TABLE II. TRADE OF JAVA.

Imports.	Percentage.	Exports.	Percentage.
Cottons - -	30	Sugar - - -	53
Rice - - -	6	Rubber - - -	10
Machinery - -	6	Tea - - -	7
		Tobacco, etc. -	4

TABLE III. CROP ACREAGE.

Crop.	1,000 acres.
Rice - - - -	8,350
Maize - - - -	4,850
Cassava - - - -	1,700
Sugar - - - -	450
Ground-nuts - - - -	480
Soya beans - - - -	421
Total - - - -	18,500

2. (a) For what will the imports of Java be used ?
- (b) What percentage of the total area of Java is cultivated ?
- (c) What percentage of the cultivated area is under rice ?
- (d) Why do not rice and maize appear as exports ?
- (e) What are the two chief exports ? To which European country will they be largely exported ?

JAVA.

Relief. Java is by far the most important of the Dutch East Indian possessions, and contains 80 per cent. of the total population. Its area and density of population roughly equal those of England (without Wales), which, considering that the people are almost entirely agriculturalists, is a striking proof of the fertility of the soil.

The general trend of the island is east and west, so that the climate and vegetation vary only in a vertical direction. The interior is extremely mountainous, and is so intersected by rivers that a continuous central chain can scarcely be said to exist. There is a marked difference between the two coasts ; the southern coast is high and rocky, and contains only one good harbour—Chilachap, while the northern coast, to which all the long rivers run, is low and fringed with mangrove swamps. The soil is largely volcanic mud, overlying limestone.

Climate and culture system. Lying within eight degrees of the equator, and with no part more than 50 miles from the sea, Java has a uniformly high temperature with an annual range of about 5° F. Most rain falls in December, January, and

February ; the driest months are July and August, which is the resting or wintering period for trees.

When the Dutch got possession of the island at the beginning of the nineteenth century they quickly realised its great possibilities, and decided to exclude other Europeans and to farm it for their own benefit. Their culture system, begun in 1830 and abandoned in quite recent years, was really a form of enforced labour. The natives, working under Dutch

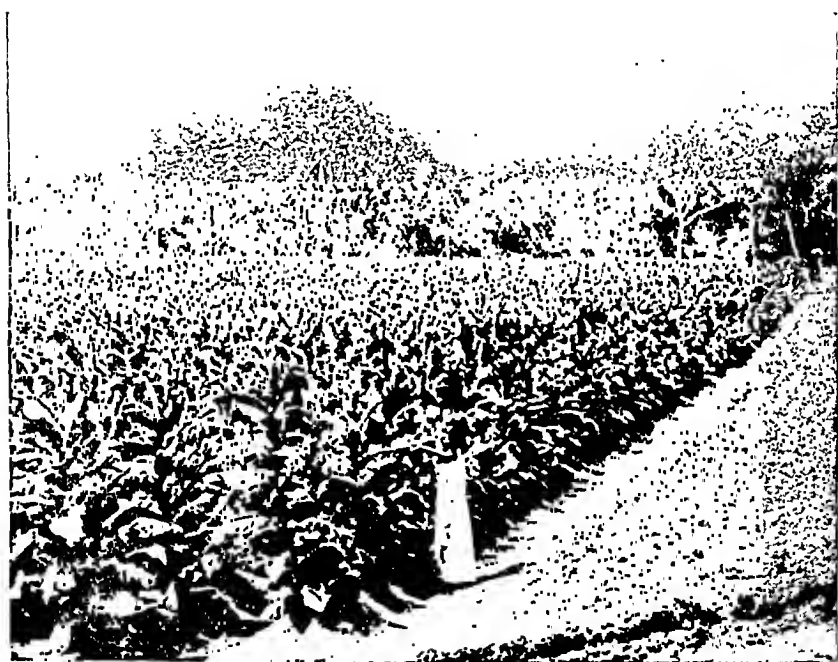


FIG. 71.—JAVA TOBACCO PLANTATION.

supervision, grew sufficient rice and maize for their own consumption, while a definite fixed acreage under sugar-canes, tobacco or coffee had to be tilled by them and the produce sold to the Government at fixed prices. Not only did the Dutch benefit by this system but the natives also, for it made them skilled farmers, freed them from food worries, and made them comparatively well to do. No other Asiatic island supports a population so dense and prosperous.

Other evidences of the benefits resulting from Dutch rule are the number of excellent waggon-roads and canalised rivers—the result likewise of forced labour.

Products and towns. About 40 per cent. of the total area is cultivated, of which practically half is under-rice. Sugar is obtained from sugar canes, grown everywhere on moist lowlands. Coffee, introduced from Arabia in the seventeenth century, is grown on terraced slopes at an elevation of from 2000 to 4000 ft. ; in recent years its culture has extended to the lowlands where it is grown as a shade tree for the young rubber. The chief market is Holland. Tea, introduced in the nineteenth century, is being supplanted in European markets by that from Ceylon and India. There is little mineral wealth.

Batavia (139), the capital, is situated on the north-west coast ; Tandjong Priok serves as its port. Buitenzorg, on the hills to the south, is the Simla of Java. A railway traverses the island from Batavia through Surakarta (118) to the ports of Samarang (97) and Surabaya (150). The latter on an excellent natural harbour, and sheltered by the island of Madura, is the most important port.

SUMATRA.

Relief. Sumatra is separated from the Malay Peninsula by the Malacca Strait and from Java by the narrow Sunda Strait (16 miles). A lofty continuous volcanic chain—the **Bukit-Barisan**—traverses the island from end to end. The range runs within a few miles of the western coast, along which extends a densely forested coastal plain. The rivers running eastward are long, and navigable for considerable distances, but their usefulness is impaired by bars at their mouths. The chief are the Musi, navigable by steam launch to Tebing-Tinggi (320 miles), the Batang-Hari, and the Siak.

Climate and products. The climate is remarkably uniform. Rain falls at all seasons in central latitudes—having two

maxima; while at the two extremities it ensues from the monsoons.

The chief products are rice, sago (staple foods of the natives), sugar-cane, camphor, rubber, tobacco, coffee and black pepper—the last five being largely exported. Excellent



FIG. 72.—JAVA AND BORNEO.

steam-coal is mined in the Padang highlands at the head of the Ombilin valley, and tin in that of the Siak, and in the islands of Banka and Billiton. The central range is rich in magnetic iron-ore and copper, but, at present, little mining, except for tin, is being done.

Towns. The west coast is rocky, with few harbours.

Padang, the chief town, is connected by rail to the Ombilin coalfield. Like **Benkulen**, a little to the south, it exports coffee—the chief export of the latter, however, is black pepper. On the flat sandy eastern coast the ports are more numerous. **Deli**, facing Penang, is the centre of a renowned tobacco district—the sandy soil and uniform humidity producing a leaf of remarkable thinness and delicacy. Deli tobacco is in great demand as outside wrapping for the best cigars, and fetches high prices. **Palembang**, now 60 miles up the Musi river and once at its mouth, exports coffee, rubber and black pepper. The town stretches for over five miles along the side of the river, being built chiefly of bamboo on floating rafts, as there is a difference of 6 feet between the levels of the water at high and low tide. **Telok-Betong** exports black pepper.

BORNEO.

Relief. This island is extremely mountainous, but possesses no active, and only a few extinct, volcanoes. From a central knot spurs radiate out to all the coasts, so that the island is divided up into a number of V-shaped plains. The rivers draining each (Fig. 72) are long, and navigable for considerable distances; traffic is impeded by sandbanks at their deltaic mouths. All overflow their banks in the rainy seasons rendering their lower courses unhealthy and uninhabitable by Europeans.

So low is the general level of the river basins that a small subsidence of the island would admit the sea to the foothills of the mountains. The outline and relief of the country would then present a remarkable similarity to those of the adjoining island of Celebes (Fig. 74).

Climate and products. The climate is one of uniform, moist heat, and the country is densely forested. Excellent timbers, such as teak, sandalwood and ebony, are exported, chiefly to China and Australia. Other products are spices, coffee, tobacco, coco-nuts and rubber; the last two being recent and rapidly expanding cultures. The island abounds in

mineral wealth ; gold and diamonds are mined round Pontianak and Sambas on the west coast, and there are extensive coal deposits near Martapura, at present unworked.

The interior of the island is little known owing to the generally unhealthy climate along the waterways, and to the hostility of the natives. The latter are mostly Dyaks,



FIG. 73.—BRUNEI—NATIVE TOWN.

Built on piles in the river for convenience of traffic. There are no native roads.

a relatively tall muscular race of "head-hunting" savages who live in dwellings by the river banks. Europeans are located on the coasts.

Political divisions. The island is divided politically into Dutch Borneo and British Borneo (British North Borneo, Brunei, Sarawak).

I. Dutch Borneo embraces about three-fourths of the

island. It is divided for purpose of government into two Residencies, having Pontianak and Banjarmassin as their capitals. The influence of the Dutch is really exercised only on the coast, where tobacco, sugar and rice are produced for export by Chinese labour. The natives, growing the same substances farther inland for their own use, have so far discouraged attempts to exploit their labour.

2. **British North Borneo**, ruled by the British North Borneo Company, produces tobacco, coffee, pepper, rattans and rubber. The chief towns are Sandakan and Jesselton, both wireless stations.

3. **Brunei** has been in the hands of the British since 1906. The capital is Brunei, built on piles, 40 miles up the river of that name. Off the coast is the island of Labuan, producing coal; Victoria Harbour on its S.E. coast is a coaling station.

4. **Sarawak** has been under British rule since 1890. English interference in the State dates back to 1842, when Sir James Brooke, ancestor of the present rajah, having put down a native rebellion, was asked by the Sultan of Brunei to take over the administration.

Tropical products, chiefly sugar, are produced along the coast. Coal and gold are found near Kuching, the capital, and quicksilver near the source of the Sarawak river.

EXERCISES.

1. How is the dense population in Java to be accounted for?
2. Indicate, as fully as you can, the importance of the Dutch East Indies to Holland.
3. What evidences are there in Java of Dutch occupation?
4. Why is Java much more densely inhabited than either Sumatra or Borneo?
5. Draw a sketch map of Sumatra and insert upon it (a) products, (b) ports.

LESSON XXI.

MALAY ARCHIPELAGO—*Concluded.*

TRADE OF PHILIPPINES.

TABLE I.

Imports.	£ millions.	Exports.	£ millions.
Rice - - - -	·2	Hemp - - -	6
Cottons - - -	5·5	Copra and Coconut oil - - -	9
Iron and steel and manufs. - - -	3·0	Sugar - - -	10
Meat and dairy products - - -	1	Cigars, Tobacco -	1
Cereals and products -	1		
Total Imports -	23·0	Total Exports -	32

TABLE II.

	Imports £ millions.	Exports £ millions.	Total £ millions.
United States - -	15·0	24·0	39·0
United Kingdom - -	1·0	2·0	3·0
France - - -	·3	·3	·6
Japan - - -	2·0	2·0	4·0

1. (a) Half the total cultivated area is under rice, yet rice is an important import. Account for this.

(b) From which of the countries named in Table II. will each of the imports mainly come? (See exports of French Indo-China, p. 169.)

(c) Which of the exports will France take? (Marseilles manufactures soap.)

(d) Which of the exports will Britain take?

(e) Why does U.S.A. have larger trade than U.K. with the Philippines?

2. Estimate what percentage of the trade of the Philippines is with the United States. How is this to be accounted for?

3. Copra is largely exported from the Philippines. Discuss the suitability of the islands for the growth of coco-nuts.

4. Express both the Imports and Exports (Table I.) by rectangles ($\frac{1}{2}$ -in. base).

CELEBES.

Relief. This mountainous island is separated from Borneo by the Macassar Strait. Its similarity to the mountain

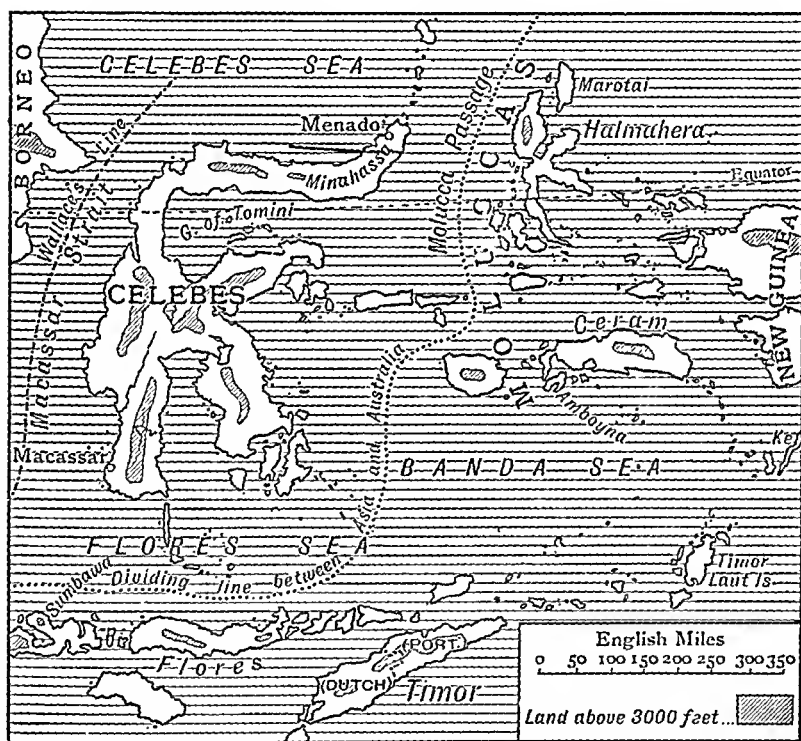


FIG. 74.—CELEBES AND SMALLER EAST INDIES.

back-bone of Borneo has already been noted. From the centre radiate four lofty peninsulas, of which **Manado**, known as **Minahassa** at its extremity, is highly volcanic.

Products. The altitude and maritime position of **Minahassa** make it the healthiest part of the island, in fact, of the

whole archipelago. Excellent coffee is grown by the natives under Dutch supervision, and exported from Menado—chiefly to Batavia. Of the other peninsulas only Macassar, running southwards, is at present exploited by the Dutch. Much coffee is exported from Macassar, which is also the collecting port of the produce of the Moluccas and adjoining islands. The natives are excellent sailors.

Smaller Dutch Islands. The remaining portion of the Dutch East India possessions consists of groups of small islands lying east of Wallace's Line, and exhibiting a flora and fauna akin to those of Australia. As a rule, the kinship becomes more apparent the nearer that continent is approached. The population, too, which is markedly Malay in the western islands, shows increased affinity to Melanesian as one travels eastward, until in some of the Moluccas and in Timor the Malays are in a minority.

Moluccas. These islands circle round the western end of New Guinea, and are clustered in three groups round Halmahera, Ceram and Ke (Fig. 74). Most of them are intensely volcanic—active volcanoes exist in Marotai, Halmahera and Amboyna, which mark a line of crust weakness from the Philippines to southern New Guinea. The products are largely spices (cloves, nutmegs and cardamoms). Halmahera, the largest island, presents a marked similarity to Celebes in outline and relief.

Lesser Sunda Islands. This chain of islands extends from Lombok eastward to Timor Laut. The largest members are Lombok, Sumbawa, Flores and Timor, which seem to be a prolongation of the volcanic mountain chain of Java. Mt. Rinjani, an active volcano in the first-named island, attains an altitude of 12,000 ft. The islands are little known, and lack, through uncertain rainfall, the profuse vegetation of the larger islands of Java and Sumatra. The eastern part of Timor belongs to Portugal.

PHILIPPINES.

Extent and structure. These islands, over 3000 in number, have an area equal to that of the British Isles. Discovered by Magellan in the beginning of the sixteenth century, they remained in the hands of Spain until 1898 when, at the close of the Spanish-American war, they were ceded to the United States. Since that time many striking improvements have been effected in the islands; railways have been built, education provided for, and large schemes set on foot for enabling the natives to grow their own food. Reminders of the Spanish rule are the prevalence of the Roman Catholic religion and of a large number of half-castes; for the Spaniards, unlike the English, generally intermarried with the inferior conquered races.

The largest and most important islands are Luzon and Mindanao, connected to Borneo by two submarine ridges--the Palawan and Sulu banks, whose directions are marked by numerous islands, the tops of submerged ranges; between is the deep Sulu Sea. The two large islands and many of the smaller contain lofty central chains. Active volcanoes are numerous, especially in north and south Luzon, where also siliceous springs abound, and in Mindanao, where Mount Apo lifts its cracked, smoking cone to a height of 10,000 ft. The whole region suffers from frequent earthquakes.

Climate—Typhoons. Lying well within the Tropics, the temperatures are naturally high, but are moderated considerably by elevation and the presence everywhere of water. The annual range at sea-level in Mindanao is about 4° F. Terrific typhoons mark the change of the monsoons in Luzon and the more northerly islands; Mindanao, however, is comparatively free.

Typhoons originate over small highly heated islands in the neighbourhood of the northern tropic. Air over a small area is rising, and intensely moisture-laden air comes in off the sea. As it rises it expands and cools, rain falls and latent heat is liberated which causes a further rise of temperature

wrecks in the adjoining waters are numerous at this season, while navigation along the eastern coasts is attended with great danger during the N.E. Monsoon. At this season produce is taken across the islands to the other coast for shipment.

Products and towns. All the islands are densely forested ; teak, ebony, sandalwood and dye-woods being the commonest trees. Of cultivated crops the chief are rice, hemp, coco-nuts, sugar and tobacco. Rice, the chief staple, has to be supplemented by imports from Cochin-China, although two crops could easily be grown. Maize, which ripens in two months, is grown in Luzon, Cebu and Mindanao. The two best known crops are tobacco and hemp. Tobacco of the best quality is grown in Panay, while Sulu grows the best "wrappers." Manila hemp is produced in the central islands, Samar, Leyte, Cebu, Bohol, but the best comes from S. Luzon ; it is prepared from the fibre of a species of banana. Certain poor qualities are exported to the United States to be made into paper. Sugar is grown extensively in Panay, and the coco-nut palm along the western shores of all the larger islands, these being now the two most important crops. Agriculture suffers periodically from locusts.

The islands are rich in economic minerals, gold, iron and lead ores of remarkable purity being found in many of the islands, but only gold is mined in any quantity. Coal, however, has to be imported—chiefly from Japan and Australia.

The capital and chief town is Manila (285) on a magnificent harbour, guarded by Cavité, a strongly fortified arsenal and dockyard. The summer capital, Baguio, on a steep mountain adjoining, is connected by rail—part of the track being on the rack system.

Iloilo (60) on Panay, with an excellent harbour, is the next town of importance.

EXERCISES.

1. In what circumstances did the United States get possession of the Philippines, and of what use are they to the United States ?

2. How are typhoons caused? Why are they not common near the equator? How has the prevalence of typhoons affected the Philippines?

3. Write notes on (a) Moluccas, (b) Minahassa peninsula.

4. Draw a sketch map of the Philippines, and indicate, by labels, the destination of the chief products. (See Tables I. and II.)

LESSON XXII.

INDO-CHINA.

TABLE I.

				Area (sq. miles.).	Population.
French Indo-China.	Siam	-	-	195,000	11,000,000
	Annam	-	-	52,100	5,555,000
	Cambodia	-	-	45,000	1,634,000
	Cochin-China	-	-	20,000	3,051,000
	Tongking	-	-	46,400	6,120,000
	Laos	-	-	98,000	641,000

1. Express, by rectangles ($\frac{1}{2}$ -in. base) the population density of each of the areas mentioned in the above Table (vertical scale, 1 inch = 50 people).

2. Compare these population densities with those of (a) Ireland, (b) Ceylon.

3. Account for the fact that Cochin China has a denser population than the Laos country. (Your answer should have reference to Fig. 76.)

TABLE II. TRADE OF BANGKOK.

IMPORTS £18 millions.

Commodity (£100,000).	Source (£100,000).
Cottons 29, Provisions 24, Iron, etc., 12, Kerosene 13.	United Kingdom 26.
Gunny bags 9, Silks 6,	Singapore 27, Hongkong 40.
Sugar 7.	India 17, China 18, N.E.I. 10.

EXPORTS £24·5 millions.

Commodity (£100,000).	Destination (£100,000).
Rice 201, Teak 10, Tin 22.	Singapore 100, Hongkong 70.

4. With regard to Table II. work the following exercises :

(a) Take each import in turn and fill up the following tabular statement :

Import.	Why Imported.	Whence Imported.

(b) To which countries is the exported rice likely to go ? Give reasons.

(c) Why does the rice go to Hongkong and Singapore ?

TABLE III. TRADE OF SAIGON.

IMPORTS.

Article.	Value (million francs).	Source.	Percentage.
Cotton tissues - - -	127	France - - -	50%
Opium - - -	64	Hongkong - - -	20%
Paper - - -	38	China - - -	10%
Kerosene - - -	19	British India - - -	6%
Gunny bags - - -	15		
Sugar - - -	18		
Total - - -	560 = £11 millions		

EXPORTS.

Article.	Value (million francs).	Country.	Percentage.
Rice - - -	480	Hongkong - - -	50%
Fish and fish products - - -	30	British India - - -	20%
Rubber - - -	36	France and Colonies - - -	20%
Total Exports -	840 = £17 millions		

5. Examine the Imports (Table III.) and answer the following questions :

(a) Account for the large imports of cottons, gunny bags and opium. Why do the cottons come from France and the bags from Singapore ?

(b) Why is there a large import of paper and sugar ?

(c) Why are the values given in francs ?

(d) Where is Saigon ?

6. (a) Compare the rice export with that from Bangkok.

(b) What percentage of the exports is rice ?

(c) Suggest countries to which the rice will finally go.

SIAM.

Extent and natural divisions. Siam occupies the heart of Indo-China, and, except for 100 miles along the Mekong river, completely separates British and French territory. Like Afghanistan it is, therefore, a buffer state. The country falls naturally into three divisions.

1. A semi-circular belt of uplands, narrow in the west, but broad in the north and east where they constitute the Laos district and the Khorat plateau.

The Laos country, bordering the Shan States of Burma, is deeply dissected by the Menam and its tributaries. Teak is floated down-stream to saw-mills at Bangkok. Chieng-mai (Zimme) (60), the chief town, is reached with difficulty by boat from Bangkok, but is more accessible by road from Moulmein.

The Khorat plateau, draining to the Mekong, is clothed with grass and resinous shrubs.

2. Lower Menam Basin. The Menam rises in the Laos country and reaches the plain by a series of rapids. In mid-summer the river overflows the last 300 miles of its course and floods thousands of acres of endyked rice and sugar fields. This part of Siam is composed entirely of alluvium, so that the Menam, "mother of waters," might justly be termed the "mother of land" as well. The climate is unhealthy, and there are few Europeans. The chief product is rice, but pepper, tobacco, cotton and tropical fruits are also grown.

The capital is Bangkok (629), some distance up the eastern distributary of the Menam. Vessels for Bangkok, drawing

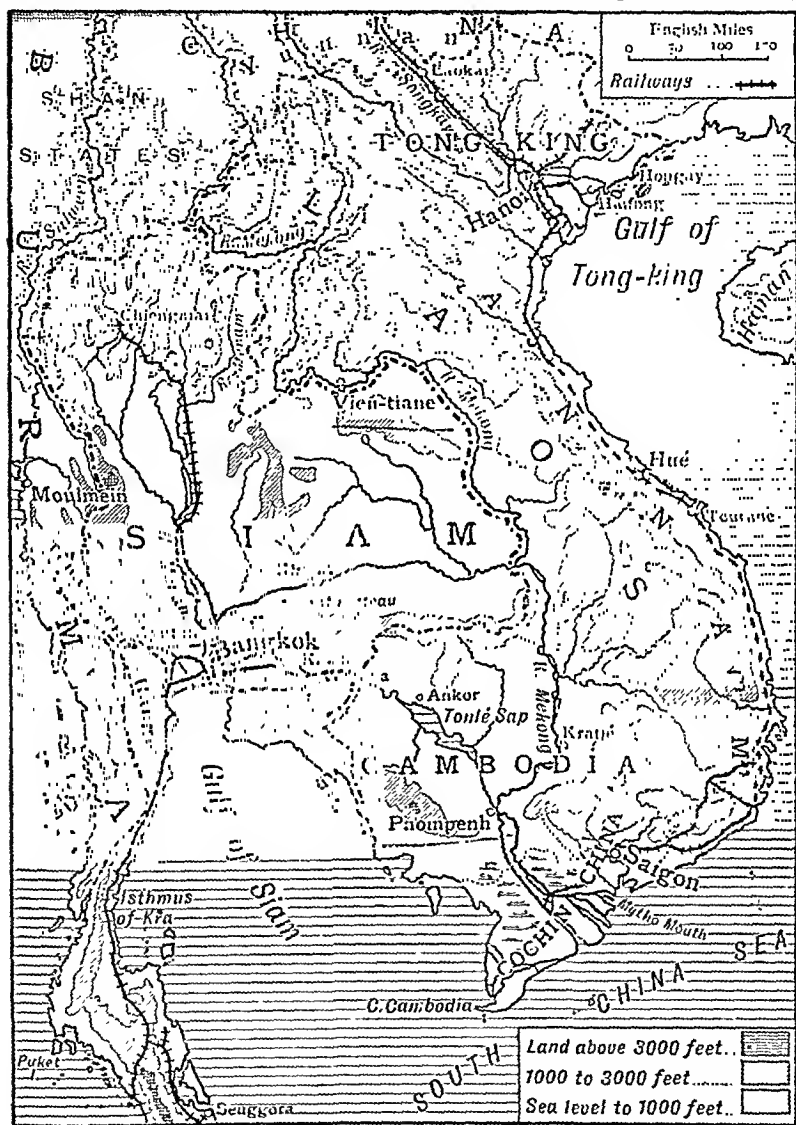


FIG. 76.—INDO-CHINA.

Emery Walker Ltd. sc.

13 feet, have to discharge all or part of their cargo at Paknam in the roadstead at the head of the Bight of Bangkok, owing to

a bar at the mouth of the river. The houses are of wood and built on piles; many are on rafts moored in the river. The newer buildings include many rice-, sugar- and saw-mills, mostly the property of Chinamen and worked by Chinese labour. Ayuthia and Paknam are river ports. Gold is mined at Kabin and Watana, a few miles E. of Bangkok.

3. Malay Peninsula. Tin is extensively mined; Puket Island (Junk Ceylon), with a population of 180,000, is one gigantic tin-mine, with an annual output of over £1,000,000.

People. The Siamese are mongols, their language being that spoken in S.W. China. After a sojourn in the Shan and Laos uplands sufficiently long for them to develop an individuality of their own, they pushed their way to the Menam lowlands, driving the natives to the hills. Here life was easy and the climate less bracing, so that the Siamese gradually lost the virile, energetic nature so characteristic of the Chinaman and of the modern Shan.

They are a quiet, merry, polite people, and show a further contrast to the Chinamen in their gradual adoption of western civilisation. They call themselves the Thai (=free), and it is interesting to note that this name, adopted long ago, is now inapplicable to any other of the Indo-Chinese peoples.

FRENCH INDO-CHINA.

Climate. French Indo-China is the large S-shaped area lying east of Siam. Only Cochinchina is directly ruled by France, the remaining provinces have native rulers under French protection. The total area is considerably larger than that of France.

Uniformly high temperatures prevail in the deltaic lowlands and along the coasts. On the interior plateau-lands adjoining the Burmese Shan States temperate conditions prevail for the greater part of the year. The S.W. Monsoon brings rain to the interior uplands between June and October, which is the wet period for the greater part of Indo-China. Annam, however, receives most rain from October to February, that

being the period when the N.E. Monsoon is blowing over the Annam mountains from the Gulf of Tongking.

Cochin-China. Cochin-China mainly consists of the delta of the Mekong. The land is alluvium-formed and has been reclaimed from salt mangrove swamps. The export is almost entirely rice, the total quantity exported being four times that from the rest of French Indo-China. Tropical-fruits, tobacco and cotton are also grown. The capital is Saigon, on a small river emptying into the Mekong delta.

Cambodia. Cambodia lies above the delta of the Mekong, and, except for a coastal range along the Gulf of Siam, consists entirely of the flood-plain of that river. Ships drawing 16 ft. can ascend by the Mytho mouth as far as the rapids at Kratié; beyond that navigation is interrupted. The overflow of the river is regulated by a western distributary which flows at flood time *into Tonlé Sap* and *outward* during subsidence.

The chief product is rice. *Pnom-penh*, on the Mekong, is the capital. North-west of Tonlé Sap are the famous ruins of *Ankor*, which attest the former greatness of the ancient Buddhist empire of Cambodia.

Annam. Annam consists of a high granite mountain range (4000-9000 ft.), down whose seaward side, scoured for half the year by the rains of the N.E. Monsoon, swift rivers bring loads of rock-waste across a narrow coastal strip to the ocean. Here, behind huge sand-dunes piled up by the winter monsoon, the rivers form shallow lagoons soon filled up with alluvium; much of the coastal strip has been formed in this way.

Rice is the chief product; teak, lacquer, salt fish, sugar, silk and cotton are also exported. The capital is *Hué*, connected by rail to the French colony at *Tourane*, 60 miles to the south, which, having a coalfield near and an excellent harbour, is destined to become an important port. The Annam coast is at all times difficult to navigate, owing to the on-shore winter monsoon and the summer typhoons.

Tongking. Tongking embraces the lower basin of the *Songka* or Red River, and is the most important of the Indo-

China provinces. Little is known of the mountainous interior, and the population is mainly confined to the delta where thousands of acres of rice are annually inundated. The Songka valley is followed by a railway, thus enabling the French to compete successfully with British Burma for the trade of Yunnan.

Hanoi, the chief town, is now the capital of Indo-China, but is being rapidly overtaken by its port Haifong, which benefits from the proximity of a rich coalfield at Hongay, on the north side of the delta. Both towns possess cotton and silk-mills: Rice and maize are the chief products; much coal is exported annually to Hongkong.

Laos territory. The Laos territory, the largest of all the states, borders Tongking, Annam and Cambodia. The climate is bracing and the soil fertile, but communication with the coast—by way of the Mekong—is so difficult that little attempt has so far been made to develop its resources. Gold, tin, lead and precious stones are known to exist, and there are extensive teak forests. The capital is Vien-tiane on the Mekong.

EXERCISES.

1. What are the characteristics of all the Indo-Chinese rivers?

2. Describe the dwellings of the river-dwellers of Lower Siam; account for their peculiarities.

3. In what way is French Indo-China of use to the French?

4. Hanoi in the fifth century was on the coast, but is now 80 miles up the Songka. Account for this.

5. How would a canal through the Kra isthmus affect (a) Bangkok, (b) Singapore?

6. With regard to the sand-bars along the Annam coast, explain (a) why the sand is there, (b) why it forms bars.

7. Why are waterways of such importance in Indo-China?

8. Draw a sketch map of Indo-China. Shade in the areas under rice. Indicate, by arrows and percentage labels, the direction of the exports from Bangkok and Saigon.

LESSON XXIII.

CHINA : RELIEF, CLIMATE AND TRADE.

AREA AND POPULATION OF CHINESE REPUBLIC.

	Area in sq. miles.	Population (approx.).
China Proper - - -	1,532,000	400,000,000
Sinkiang - - - -	550,000	2,000,000
Mongolia - - - -	1,368,000	7,000,000
Tibet - - - - -	463,000	2,000,000
Manchuria - - - -	364,000	20,000,000
Chinese Republic - - -	3,913,560	433,000,000

1. Estimate the following :

(a) Percentage of total population of Chinese Republic found in China Proper.

(b) Percentage of total area of Chinese Republic found in China Proper.

2. Draw six rectangles proportional (roughly) to the areas of the British Isles and the five divisions of the Chinese Republic. Scale, 1 sq. in. = 120,000 sq. miles.

3. Draw six squares of two inch side and in them put dots to represent the number of people to the sq. mile in each of the six areas named in Ques. 2.

4. (a) Hongkong and Yunnan have practically the same latitude. Examine their positions on a relief map and then account for the differences in temperature that you notice in the table on the following page.

(b) Consider the positions of Hongkong, Shanghai and Tientsin. Compare the temperatures of these places for each month. State, in general terms, how they differ.

(c) How do the December, January and February temperatures of Tientsin differ from those of Hongkong? Account for the great differences.

(d) Shanghai, with the latitude of Port Said, has the winter temperatures of London. How do you account for this? (See Fig. 90.)

CLIMATE OF CHINA.

		J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year.
Hongkong	T.	60	58	63	70	77	81	82	81	80	76	69	63	85
	R.	1	2	3	6	13	16	13	14	9	5	2	1	
Shanghai	T.	37	39	46	56	64	75	80	80	72	63	52	42	44
	R.	2	2	3	4	4	7	5	6	5	3	2	1	
Tientsin	T.	20	30	40	53	64	73	77	80	70	60	45	32	18
	R.	—	—	—	1	1	2	5	5	3	1	—	—	
Yunnan	T.	55	57	63	72	78	84	86	85	81	75	67	60	50
	R.	—	—	1	4	8	9	8	12	4	2	1	1	
London	T.	38	40	43	49	55	61	64	63	58	50	44	40	26
	R.	2	2	2	2	2	2	3	2	2	2	3	2	

5. (a) Plot rainfall curves (same squared paper) for the above Chinese towns. In what respects do they agree?

(b) Account for the heavy rainfall of Yunnan and the light rainfall of Tientsin.

(c) Plot a rainfall curve for London. How does it differ from those of Ques. 5 (a)?

(d) On the same squared paper plot temperature curves for (a) Yunnan and London, (b) Tientsin and Hongkong.

EXPORTS FROM CHINA.

	Percentage.	Provinces.
Raw silk - -	16	Yang-tse Valley and Northern Provinces (mainly).
Beans and products - -	20	Honan, Chihli, Shantung, Central Yang-tse Provinces.
Tea - -	4	(Green) Kiangsi, S. Nganhwei, Chekiang, Fokien. (Black) Hupeh, N. Kiangsi, Hunan, Fokien, Kwangtung.
Eggs - -	4	Yang-tse and Si-kiang Valleys.
Raw cotton -	3	Chihli, Honan, Shantung.
Other things -	53	Vegetable oils 4, Metals 3.
Total Exports -	1000 million Hankow Taels.	British Empire 20%, Japan 26%, U.S.A. 15%.

6. (a) Name four ports from which tea is exported.
 (b) Name two ports from which eggs are exported.
 (c) Name three ports from which silk is exported.
 (d) What is the general nature of the exports from China ?

7. TRADE OF CHINA : IMPORTS. (Hk. Tael = 1s. 10d.)

Country.	Million Hk. Taels.	Articles.
United Kingdom -	120	Cottons, tobaccos, iron manufactures.
Japan - - -	320	Cottons, cotton thread, coal, fish, paper, matches.
U.S.A. - - -	231	Timber, kerosene, metals.
India - - -	54	Cottons, gunny sacks, opium.
Total - - -	1400	Cottons 20%, sugar 11%, metals 8%, rice, etc., 8%.

(a) Draw a circle (radius 2 inches), and divide it into six sectors to represent the value of imports from the above countries. Mark the remaining sector "*other countries*."

(b) What percentage of British imports into China is cottons ?

(c) Why does tobacco enter as a British import ?

(d) What is the general nature of the imports from Britain ?

Some Chinese Words. The following are a few of the commoner Chinese words with their meanings. They should be committed to memory, as they help to distinguish otherwise very confusing names.

ch-ang	an area of low ground.	ho	<i>river</i> (in N. China).
chi	to govern, to rule.	hsien	a district.
chow	a territorial division	hu	a slope to the water side.
chung	the middle.		
fên	a part, a division.	hu	a lake.
hai	sea.	hwang	yellow, wild, supreme.
han	dry, embankment.		

kan	dry, a hole.	sheng	province.
kian	a large river, a frontier, a port.	si	<i>west.</i>
kin	gold.	sin	heart, new.
king	capital.	su	place.
kwang	broad, vacant.	tao	island.
kwoh	kingdom.	tien	field, sky.
ling	pass on a mountain ridge.	tsin	ford, ferry.
mei	plum.	tung	<i>east.</i>
nan	<i>south.</i>	wan	winding bank.
peh	<i>north.</i>	wei	military station.
ping	level plain.	wu	fine, military.
po	wave.	yang	middle.
sha	sand.	ying	brave.
shan	mountain.	Ying- kwoh	England
		yun	clouds.

Position and Relief. China Proper, generally called China, contains 95 per cent. of the total population of the Chinese Republic. Four dependencies, viz. Manchuria, Mongolia, Sinkiang and Tibet, extend from its western border into the interior of Asia, and, by their vastness, sterility and altitude, shut off China Proper for centuries from the trade and civilisation of the West. From Tibet, four broad upland regions project eastward, like the fingers of a hand, through China Proper, and between them, first in ravines and then in broadening valleys, run the Hwang-Ho, Yang-tse-kiang, and Si-kiang, each entering the sea through a broad deltaic plain. It is in these river valleys, with their rich alluvial soil and navigable flood-rivers, that the population is chiefly massed.

Climate. There is a remarkable uniformity of temperature in the summer season, Peking in lat. 40° N. having much the same temperature as Canton. This is due to the shade-effect of the monsoon, which, setting in at Canton about mid-May, reaches Peking in late June, the precipitation diminishing northwards and inwards. As regards the winter conditions, the controlling factor is the large land mass of Central Asia which experiences, at that season, temperatures far below zero.

Heavy, cold, dry air, settling down over the wide plateau-lands of Mongolia and Tibet, spreads outwards over China, forming, as it twists to the right, the N.W., N. and N.E. Monsoon. Peking has a January temperature of 29° F., while most of the rivers north of the Hwang-ho freeze, and that river, too, in Kansu and Shensi. It is in the winter season that there is a marked difference

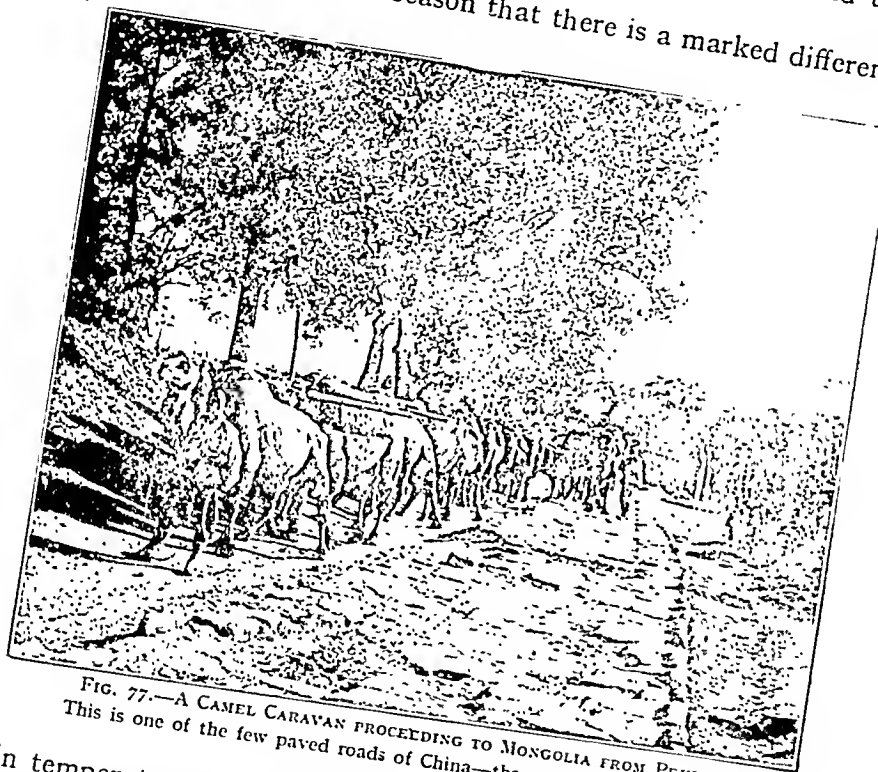


FIG. 77.—A CAMEL CARAVAN PROCEEDING TO MONGOLIA FROM PEKIN.
This is one of the few paved roads of China—the camels are avoiding it.

in temperature between the north and south, for, although the temperature at Canton in January has been reduced to 55° F., yet at that temperature cereals will grow—which makes all the difference. Extensive dust-storms are of frequent occurrence in the north.

Some effects of the climate. The alternation of tropical summer heat and rain with dry, rigorous, winter cold has had several marked effects.

1. The rivers flood extensively, so that silt-grown rice can be produced in wide riverside tracts, but, except in the extreme south, there is only one growing season, while north of the Hwang-ho rice cannot be grown at all.

2. Inability to grow winter crops has had the effect of making the people far-seeing, energetic and provident.

3. The winter cold braces the people and counteracts the enervating influence of the moist, hot summer. Thus the Chinese offer a marked contrast to the languid, care-free dwellers in the deltaic lowlands of Indo-China and the Malay Archipelago

Communication. Traffic throughout China is chiefly by river and canal; "dry ways" as roads are called being very rare. There are many reasons for this backward state. To begin with, the people are mostly massed either in self-contained river valleys requiring little from the outside world, or on flood-plains having a permanent canal and river system. Any road made along the valley would be flooded in summer and buried under silt in winter. Roads from valley to valley are not a crying necessity, and, in the north of China especially, would in any case suffer heavily from the winter dust storms. The Chinese are a leisurely people, and portorage by camels, mules, asses and human beings is quite quick enough for them. Hence the roads are merely tracks through mud or sand—depending on the season—and impossible for two-wheeled vehicles.

The chief railway at present runs from Peking to Hankow and thence towards Canton, which town it will eventually reach through the Cheling Pass. Recent years have witnessed a steady increase in railway mileage. At present there are 12,400 miles open to traffic and 35,000 miles of motor roads. Other large railways are projected, to be built like the others by European capital, and only await more settled times, both in China and Europe, for their commencement.

One day China, copying Japan, will begin vigorously to develop her enormous wealth of coal and iron. Dense populations will begin to crowd together far from rivers, ports,

and sources of food. Then will follow a rapid development of road and railway, just as happened in England in the nineteenth century.

People and religion. The Chinese are the most numerous and most representative branch of the Mongolian stock.



FIG. 78.—CHINESE COOLIE PORTERS RESTING.
Note size of load and shape of carrier.

Their physical characteristics are : broad head, straight black hair, prominent cheek bones, oblique eyes with a sort of third eye-lid closing inwards, thin lips, yellow skin, short stature, and great virility. The Chinese are efficient workmen, and hold a high position in the business world for honesty and straight dealing. All possess the

qualities of endurance, thrift, courage and disregard of death.

The original home of the Chinese was probably Tibet, whence they first migrated to the oases skirting the present province

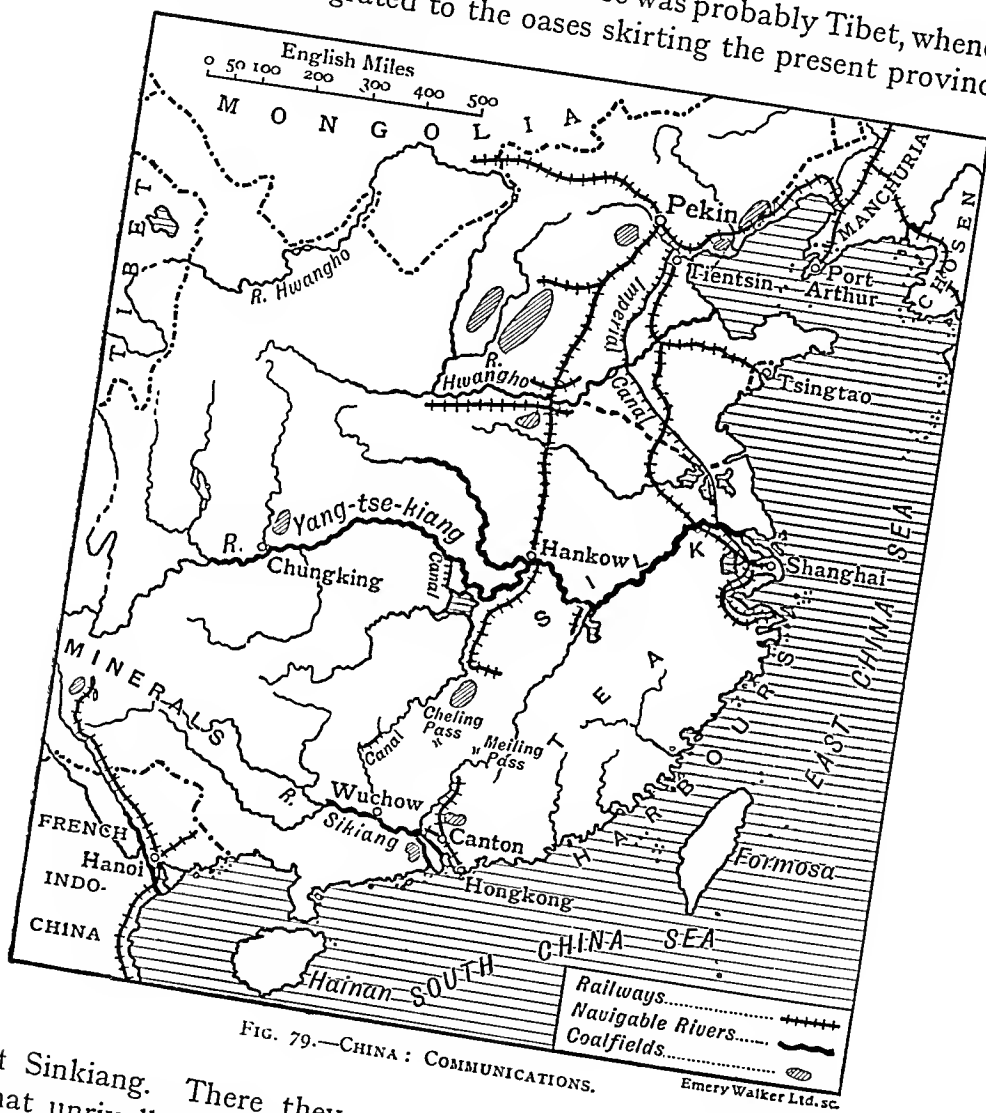


FIG. 79.—CHINA : COMMUNICATIONS.

of Sinkiang. There they acquired through long residence that unrivalled knowledge of irrigation-farming which they possess to-day. From this horse-shoe ring of oases (p. 244) they migrated eastwards, entering China along the Wei-ho.

No nation can boast such an ancient civilisation, which dates back thousands of years before the Christian Era.

The most enlightened Chinese follow the religion as reformed by Confucius, but the prevailing religion is Buddhism. Ancestor worship is widely observed. Ancient customs and institutions are held in high regard, so much so that progress has been hindered in many ways through a rooted objection to change. Isolation from the west by the mid-Asian highlands helped this tendency.

A change, however, is creeping over China. The benefits resulting from the introduction of railways are obvious to all, and, with the example of Japan, there is a growing disposition to copy western methods in other things as well. Antipathy to and distrust of foreigners are disappearing, and many ports, called Treaty Ports, are now open to foreign vessels.

The country is so large that it is doubtful whether a national spirit, as in Japan, will ever be created. At present the country is passing through a period of unrest; the old imperial form of government has been abolished and a republic instituted. Several provinces have raised futile rebellions, but gradually the whole country is settling down to a form of government somewhat in keeping with that of the United States of America, each province being to a large extent self-governing and administered by its own officials.

Trade. An important export is raw silk, which accounts for roughly one-sixth of the total export. All the products figuring in the Export Table (p. 176) are agricultural, while those appearing in the Table of Imports are almost entirely manufactured articles. Of these by far the most important are materials made of cotton. Nothing could be more eloquent of the backwardness of the country than the fact that they export raw cotton, wool and silk, and import cottons and woollens; while coal is an important import in spite of the enormous deposits of that mineral in various parts of the country.

EXERCISES.

1. The rivers of China run W.-E. How does this affect their usefulness?
2. The Chinese have done little to develop the resources of their country. Mention facts that bear out this statement.
3. Write a short note on the means of communication in China.
4. State what you know about the religion of the Chinese. How has religious belief affected the development of the country?
5. Where are the people of China most densely massed? Account for this, supporting your arguments by reference to the export statistics.
6. On a large sketch map of China Proper, containing boundaries of the provinces, fill in data of the Export Table. (Thus write S for silk, T for tea, etc.) Add the three large rivers.
7. On a large sketch map of China shade in the area under tea. Add three ports for this area, also the Yang-tse.

LESSON XXIV.

HWANG-HO AND PEI-HO BASINS.

1. Fill up the tabular statement with regard to the following:

- (1) Kansu, Shansi, Shensi, Shantung, Honan, Chihli;
- (2) Fen-ho, Hwang-ho, Pei-ho, Tsin-ling;
- (3) Peking, Tientsin.

Name.	Meaning.	Comment.

2. TRADE OF CHINESE PORTS (£100,000).

	Population. ooo.	Foreign Imports.	Native Imports.	Exports.	Total Trade.
Shanghai - -	651	135	45	130	310
Hankow - -	826	70	23	118	211
Tientsin - -	800	89	31	58	178
Canton - -	900	42	32	81	155

(a) Express, by rectangles, the exports and total trade of the above four ports.

Relief and climate. The Hwang-ho and Pei-ho basins consist of three mountainous provinces, viz. Kansu, Shensi, Shansi, and three semi-low-lying provinces, viz. Honan, Shantung, Chihli. The three former consist mainly of folded sandstones levelled by extensive deposits of loess, the latter are formed largely of alluvium.

The climate is extreme, the rivers being frozen over in winter, and the people sleep at that season on stove-heated beds (*kangs*). Rice cannot be grown north of the Hwang-ho. The people are taller than the southern Chinese, due probably to their wheat diet and mixed origin.

Loess soil. The extent of this deposit is shown in Fig. 80. It consists of a very finely-divided yellow rock reaching in

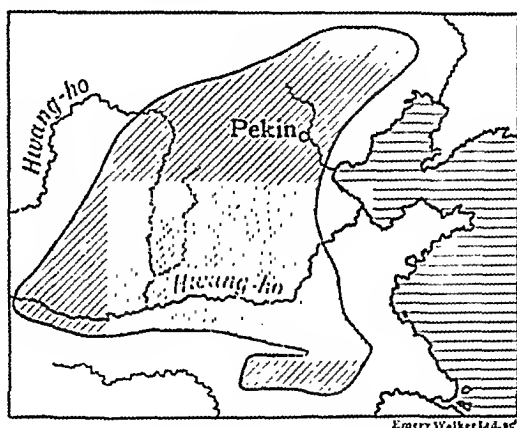


FIG. 80.—CHINA : LOESS SOIL AREA.

some places a depth of 2000 feet. From the fact that it is not stratified and contains only land-fossils it is considered to have been blown from Central Asia. It is rich in lime and remarkably fertile. The rock weathers vertically, due to the presence in it of vertical pores—once occupied by submerged grasses. These pores make the rock extremely porous; on the other hand water will ascend from below, just as oil travels up a wick, bringing dissolved plant food to the surface. Hence the soil is fertile if near rivers and generally infertile if remote.

The rivers have cut deep beds through the loess to the older rock beneath, so that irrigation is generally impossible. The roads, too, have sunk far below the surface, and in many regions they have to follow the intricate weathered gorges. Native houses are cut in the cliff face, tier above tier, and are warmer in winter than surface dwellings would be.



FIG. 81.—SECTION THROUGH LOESS SOIL, SHOWING RIVER BEDS RESTING ON SOLID ROCK.

To a traveller crossing a loess plain the country therefore seems devoid of life until he sees a road lying at his feet. The loess in Kansu, Shensi and Shansi is *in situ*, that found in the other provinces has been carried there by rivers and is alluvial—hence less porous and more fertile.

The Hwang-ho. In Kansu many irrigation canals take out. Thence to the sea the river is broad ($\frac{1}{4}$ mile), shallow and swift, except after the monsoon, when its volume is increased. From Honan to its mouth the river deposits loess, and the banks are raised. The danger from floods has caused embankments to be built one behind the other on each side.

The river has changed its course near Kaifeng on many occasions (Fig. 82). Before 1852 the mouth of the river was south of Shantung. As millions are drowned in each change of course the name *China's Sorrow* is sometimes given to it. The river is not very useful for navigation. Small stern-wheel steamers can reach Kansu, while boats drawing 6 feet can ascend the Wei-ho past Singan.

Kansu. This province, thrust westward between Mongolia and Tibet, is an important highway between Central Asia and the populous plains of China. An important caravan route passes through the Great Wall by the famous *Jade Gate* at Suchow, crosses the Hwang-ho at Lanchow—by boat-bridge in summer and over the ice in winter—and proceeds thence into Shensi along the Wei-ho. This route is historic.

The province has naturally suffered severely from invasions, evidences of its troubled history being found in its ruined towns, mixed population and the prevalence of Mohammedanism. Lanchow on the Hwang-ho, in the centre of irrigated orchards and tobacco fields, is the capital.

Shensi. The Tsin-ling Mountains, lofty and densely forested, bisect the province, completely separating the basin of the Hwang-ho from that of the Han. The northern part of the province includes the Ordos plateau, once the granary of China and now infertile steppe. Deforestation of this and the adjoining plateau of Shansi has brought about lamentable over-drainage; the soil is denuded and dehydrated, and the Hwang-ho silted up. The chief crop is opium, grown in the valleys of the Wei and Han. The capital, Singan, near the navigable Wei, and commanding the route along that river, is a historic town and trade centre.

Shansi. This province consists almost entirely of a loess-covered plateau (2500-5000 ft.) lying entirely north of the Hwang-ho, which bounds it on two sides. The Wutai range contains five of the nine sacred peaks of China. The loess soil is unproductive, and the chief centres of agriculture are a series of old alluvial lake beds along the Fen-ho valley, at the centres of the most important of which stand Taiyuen, the capital, and Pingyang.

The mineral wealth is enormous. Deep ravines show that the loess soil is almost everywhere underlaid by a thick and extensive coal-seam—of anthracite east of the Fen and bituminous coal west. This huge coalfield, covering over 13,500 square miles (nearly twice the area of Wales) possesses several commercial advantages.

1. There are extensive deposits of iron ore on the field.
2. The coal-seams are near the surface; thus the coal can be worked by drifts, and the wagons loaded direct.
3. Haulage to the plain will be light.

At present the industry suffers from want of roads and railways, and comparatively little mining is carried on by modern methods.

Honan. Honan is a flat, loess-covered plain in the east, growing wheat, maize, cotton and opium, and densely populated. The west is mountainous, but contains many fertile valleys in which silk-worms are reared on dwarf oaks. There are extensive coal and iron deposits in the west, especially near Honan and Lushan. The capital is **Kaifeng**, twenty miles south of the Hwang-ho and twenty feet below its level.

Chihli. This province consists of a barren, mountainous area outside the Great Wall and a fertile plain of alluvial loess bordering the shallow Gulf of Chihli. The population is mostly crowded into the western portion of the plain, where excellent crops of wheat and pulses are grown. The winter monsoon raises terrible dust storms, which frequently obliterate roads and paths. Coal is found in great abundance west of Peking, and at Kaiping (on the Peking railway and near a navigable river).

Peking (800), the capital of the country, stands on the Pei-ho, in the middle of a dreary, sandy plain. It is a walled city in two rectangular parts—the Tartar City and the Chinese City. It owes its importance chiefly to its strategic position guarding the **Kalgan Pass**. Its port is **Tientsin** (800), whose position on the Pei-ho, Grand Canal, and Peking railway makes it the most important town of northern China.

Shantung. The province of Shantung consists of a rocky mountainous peninsula encircled on the west by a fertile alluvial plain. The coast is rocky, deeply indented, and contains many fine natural harbours. From one of these—**Kiauchow Bay**—a railway crosses the peninsula to **Tsinan**, the capital. The peninsula is subject to fogs in July and August, due to the meeting of a cold and warm current. The industry is the rearing of silk-worms which spin an inferior silk ("shantung"). The plain is densely populated, and grows immense crops of wheat and millet. Many emigrants leave Shantung yearly for Manchuria and Inner Mongolia. **Wei-hai-wei**,¹ on the north coast, was leased to Britain in 1899, and **Tsing-tao** to the Germans, by whom it was rapidly developed until 1914, when it fell to Britain and Japan.

¹ Tsing-tao was returned to China in 1922, and Wei-hai-wei in 1930.

EXERCISES.

1. Say what you know about the loess soil, illustrating your answer by a map and sketches.
2. Estimate the usefulness of the Hwang-ho.
3. Compare Shansi and Chihli in as many ways as you can.
4. The Hwang-ho is sometimes called (a) China's Sorrow, (b) the Yellow river. How did these names arise?
5. Compare Shantung with Honan as regards (a) soil, (b) climate, (c) products.
6. Account for the importance of Peking, Tientsin, Tsing-tao.
7. Illustrate by a diagram the natural advantages possessed by the Shansi coalfield.

LESSON XXV.

YANG-TSE-KIANG BASIN.

Province.	Area (sq. miles).	Population.
Szechuan - - -	218,480	54,500,000
Hupei - - -	71,410	21,260,000
Hunan - - -	83,380	20,580,000
Kiangsi - - -	69,480	16,255,000
Nganhwei - - -	54,810	14,075,000
Kiangsu - - -	38,600	15,380,000
China Proper - -	1,532,420	302,110,000

1. (a) Fill in the following tabular statement regarding the above six provinces:

Province.	Population Density.	Whether mainly Lowland or Highland

- (b) Give the meanings of the names: Hupei, Hunan, Yang-tse, Chang-sha, Nanking, Poyang. Are they suitable names?

(c) Which province is most densely populated? State its physical features.

2. WORLD'S RAW SILK, 1913-14, 1928-29.

PERCENTAGE PRODUCTION.

	1913.	1914.	1928.	1929.
China - -	31	26	18	2
Japan - -	44	46	80	93
Europe - -	16	22	1	1

(a) Summarise in a few words the changes shown in the above table.

(b) Divide two circles into segments to illustrate the raw silk production in 1914 and 1929.

Characteristics. Although comprising only one-third of the total area of China Proper, the Yang-tse basin contains nearly one-half of the total population and conducts more than one-half of the country's trade. There are six provinces in the basin, through all of which the main river passes as a gigantic trade artery.

To the basin of the Hwang-ho that of the Yang-tse offers a marked contrast. The former is an area of *extremes*, there being, from east to west, a great variation in temperature range, rainfall, relief, productivity of soil and density of population. The keynote of the Yang-tse basin is *uniformity*, as can be seen by a study of the following table :

	Shanghai.	Hankow.	Chengtu.
Winter temperature (Jan.) -	38°	39°	44°
Summer temperature (July) -	80°	83°	79°
Annual rainfall - - -	44 in.	54 in.	37 in.

The rainfall is more certain and more evenly distributed than in the Hwang-ho basin, and the generally more humid atmosphere in summer is accentuated by the presence, at that season, of extensive lakes along the margins of the river.

With a long growing season and abundant moisture from both the overflowing river and the monsoon direct, extensive crops of rice can be grown from one end of the basin to the other—on the marginal paddy fields and on terraced slopes. From Szechuan to the sea two food crops (rice and beans) are grown yearly from the same patch, and it is to this abundance of cheap food that the dense population of the basin is due. The staple foods are rice and fish, for both of which the river is directly responsible. Other products are silk, tea, cotton,

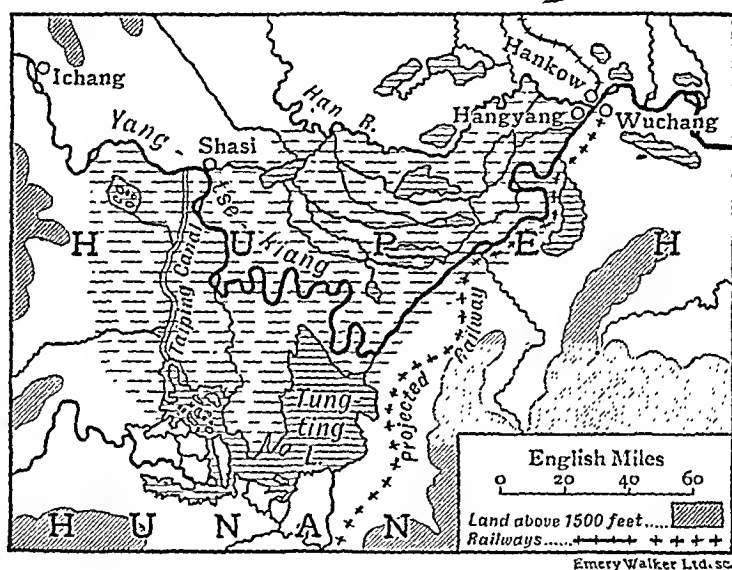


FIG. 83.—HUPEH PLAIN, SHOWING TUNG-TING LAKE AND AREA FLOODED BY YANG-TSE IN SUMMER.

sugar, opium—the first two being largely exported. Coal and iron-ore abound in Hunan and Szechuan.

The navigable river has encouraged commerce. The river towns are now stocked with imported manufactured articles, useful and luxurious, which are bartered for such surplus products as tea and silk. Thus the growth of trade along the river has brought about a steady growth in the productivity of the people, and an improved standard of living. Many of the articles formerly imported are now made at Shanghai, Nanking and Hankow; hence this is also the chief manufacturing area of China.

The Yang-tse-kiang. From its source in the Kuenlun Mts. to its junction with the Min-kiang, the Yang-tse is a swift, unnavigable river, running for the most part in a deep, impassable gorge. In Szechuan the river is navigable by steamers, and is crowded everywhere and at all times by junks; its level rises in summer over 70 ft. at Chungking. From Kweichow to Ichang (120 miles), the river is again confined to a deep gorge, and its course impeded by rapids. During the flood season, from May to November, when there is

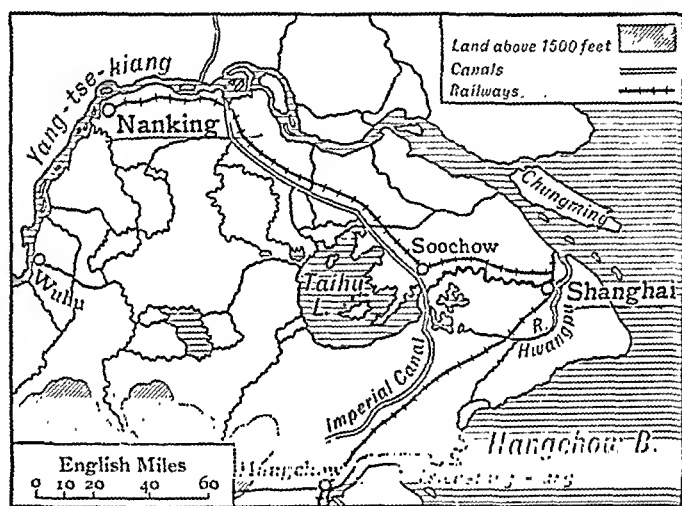


FIG. 84.—MOUTH OF YANG-TSE, SHOWING LAKE AREA BEHIND SHANGHAI.

deep water in the rapids, river steamers can ascend from Ichang to Chungking, the journey taking from two to three days. At other times junks hauled by trackers are employed, the voyage taking from three to six weeks, depending on the number of trackers, size of junk, and strength of current. The return journey takes about as many days.

From Ichang to the sea (960 miles), the river is everywhere navigable by small steamers, while ocean steamers can reach Hankow (630 miles). The summer floods detract from the usefulness of the river, for at that season the triangular area between Hankow, Shasi and the Tungting lake is under

water in which the course of the river is lost (Fig. 83). Hence a through steamer service from Hankow to Chungking is not attempted as the navigation season up to Ichang is the closed season in the rapids.

A series of large lakes regulate the flood waters ; of these the chief are the Tungting (75 m. by 60 m.) and Poyang (90 m. by 20 m.)—both extremely variable in area. The river is tidal to Wuhu above Nanking, and it is only at high tide that steamers drawing 14 ft. can cross the bar at its mouth. The growing island of Chungming, dividing the estuary, is built of silt, and silt threatens soon to clog up the Hwangpu river and block the way to Shanghai.

Like the Hwang-ho, the Yang-tse has had many mouths ; one, the most southerly, ran eastwards from Wuhu through the Taihu lake to Hangchow Bay, with a distributary past the site of Shanghai. Its course is marked by many large shallow lakes (Fig. 84).

Szechuan. Szechuan is almost completely isolated. Drizzling rains and mists accompany the summer monsoon, making the climate particularly humid and oppressive. Sunshine at that season is rare ; on a recent occasion the sun was invisible at Chungking for fifty consecutive days ! The winters are comparatively warm and free from frost ; winter crops as well as summer crops can be grown. The soil of the central plain, which is in reality an old lake basin now deeply furrowed by rivers, is derived from red sandstone and contains extensive salt deposits (cf. Cheshire). On that account eastern Szechuan is generally spoken of as the Red Earth Region. This area is a network of canals, and, as the sandstone has a wonderful capacity for holding moisture, the valley sides are terraced to their summits. Rice, sugar-cane, maize and beans are grown in the plains, and tobacco, mulberries, opium, wheat and rhubarb on the slopes. Laborious traffic in flat-bottomed boats is possible up the swift rivers, while stone roads or stairs admit of horse transport up the terraces.

The capital is Chengtú (500), on a small plain 2800 sq. miles

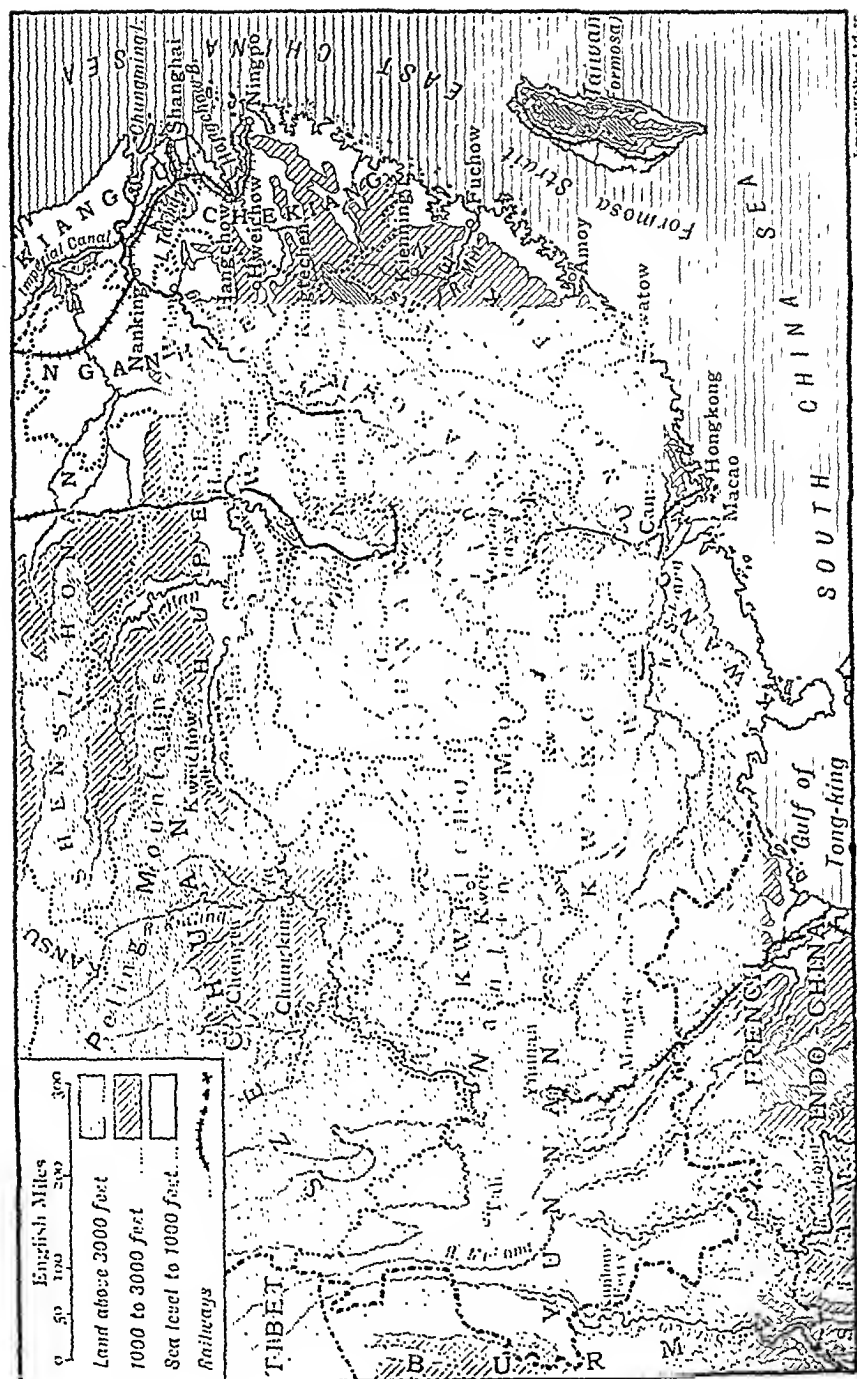


FIG. 83.—SOUTHERN CHINA.

in area, with a population of 2500 to the square mile. It is a well-built walled city, containing a university and medical school. The irrigation system surrounding the city is the most perfect in the world. **Chungking** (600) is a river port and busy emporium. Coal of inferior quality and salt are mined, and gold is obtained from the bed of the Yang-tse, which in western Szechuan is called the **Kinshakiang** (river of golden sand).

Hupei. Hupei consists largely of the flood plains of the middle Yang-tse and of its tributary the Han; much of its area is occupied by navigable fish-stocked lakes (Fig. 84). Rice and cotton are the chief crops. The triple town **Hankow** (900)—**Hanyang** (400)—**Wuchang** (400), standing at the junction of the two rivers is the second port in China. **Hankow**, a densely populated city of narrow streets and mean houses, has timber, silk and cotton mills. **Hanyang** makes steel-rails for the railway, using local iron-ore and coal.

Hunan. Hunan is mountainous, and drains to the shallow Tungting lake. It is the timber region of China, and large rafts 100 yards long crowd the lake in the flood season on their way to Hankow and other ports. Life centres round the Siang valley along which the railway will one day pass to Canton. Excellent tea is produced in this valley. Above **Changsha** (250) are extensive, easily worked deposits of anthracite, which is exported to Hankow and Shanghai. There are also valuable unworked deposits of gold, silver, copper and lead.

Kiangsi. Kiangsi is the counterpart of Hunan, the river and lake in this case being the Kan and Poyang. The capital **Nanchang** (250), thirty miles south of the Poyang lake and once on it, is on the historic road to Canton over the Meiling Pass. **Kingtechen** has a famous porcelain industry, once employing a million men. The china clay or kaolin used in the works is obtained from the Kaoling Mts. near, the granite decomposing readily into clay in this hot, moist climate. Tea is grown on the eastern highlands.

Nganhwei. Nganhwei, crossed by the Yang-tse, has a

diversity of relief, climate and products. Tea is grown on the hills north and south of the river, the best qualities coming from Luhgan ("sunglo leaf") and Hweichow. The latter region also produces Indian ink. Wuhu, an important river port, is the chief town.

Kiangsu. Kiangsu is a monotonous alluvial plain studded with lakes. It contains the mouth of the Yang-tse, and, before 1851, contained that of the Hwang-ho as well. The silt of these two rivers has built up the province; conse-

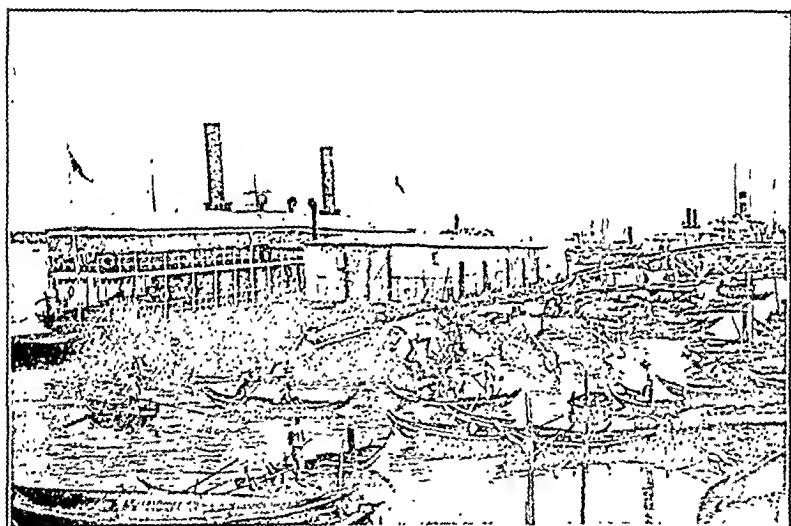


FIG. 86.—SCENE ON THE YANG-TSE. Note the various types of vessels.

quently the shore waters are shallow and the ports are on the river.

The lake region south of the Yang-tse is the most fertile part of the province; rice, silk, cotton and fish are extensively produced. The Grand Canal passes through this region and thence to Peking; it was built originally to convey rice to the capital. The Taihu or Great Lake is watered from the Yang-tse in dry seasons, while in wet it overflows into the canal. It teems with fish, and has a busy steamer service. The northern lake region is not nearly so fertile, the water being almost as productive as the soil.

The capital is Nanking (270), near the south bank of the Yang-tse. The present city stands on the ruins of an older city destroyed in the Taiping rebellion. The chief port is Shanghai (651), twelve miles up the Hwangpu, and the largest port in China. This city, backed by a wonderful system of

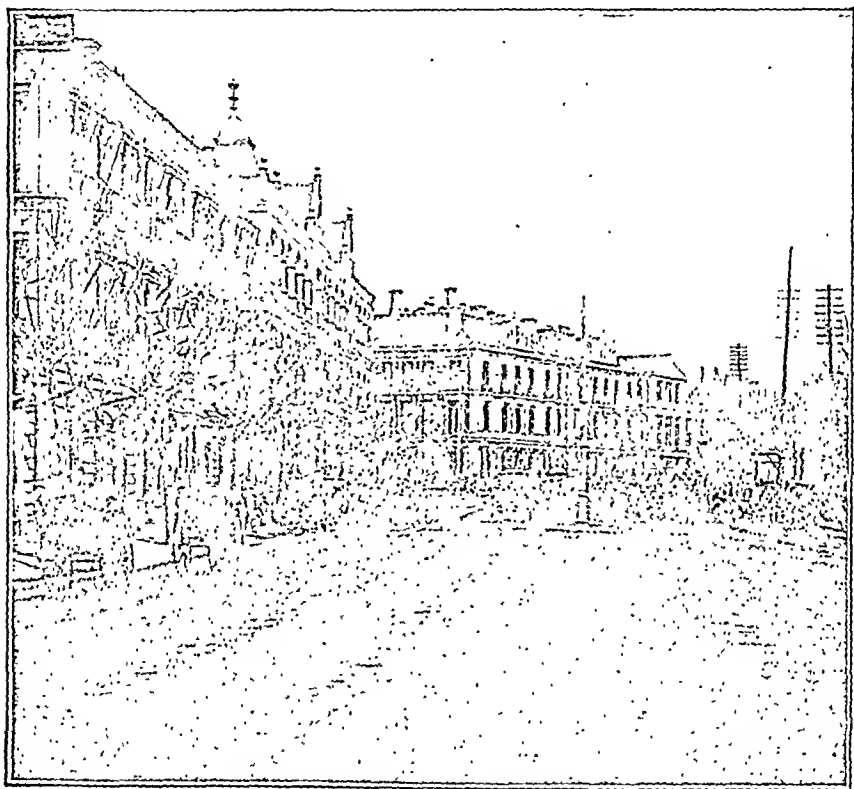


FIG. 87.—SHANGHAI—THE BUND.

This is the European quarter adjoining the quay. The native quarter is very different.

canals and waterways, controls the traffic of the Yang-tse—both imports and exports coming there first of all to be sold. It is the most European of Chinese cities, its streets being wide, with good shops. There are now many cotton mills and factories.

EXERCISES.

1. Say what you know about the Red Earth Region; illustrate with a map.
2. Discuss the Yang-tse as a waterway.
3. Say what you know about the lakes Tungting, Poyang, Taihu.
4. What industries are carried on at King-te-chen, Hanyang, Shanghai? Account for them as far as you can.
5. Thousands of Chinese live on the Yang-tse. State how they earn their living.
6. Account as far as you can for the density of the population in the Yang-tse basin.
7. (a) Draw a map of the Yang-tse basin, insert and name the six provinces, the chief tributaries, Tungting and Poyang lakes, and the following towns:—Chengtzu, *Chungking*, Ichang, Shasi, *Changsha*, Hankow—*Hanyang*—Wuchang, Wuhu, *Nanking*, *Nanchang*, Kingte-chen, Shanghai.
(b) Give the meaning of each name in italics and explain why the name was given.
8. On a map of the Yang-tse basin shade in areas under tea and rice.

LESSON XXVI.

SOUTHERN CHINA.

TABLE I.

Province.	Area (sq. miles).	Population.
Yunnan - - -	146,680	8,053,000
Kweichow - - -	67,160	9,265,000
Kwangsi - - -	77,200	5,425,000
Kwangtung - - -	99,970	23,700,000
Fokien - - -	46,320	8,560,000
Chekiang - - -	36,670	13,950,000
Yang-tse Basin - -	536,160	142,050,000
China Proper - - -	1,532,420	302,110,000

1. (a) Calculate the population density in each of the above eight areas.

(b) Make a general statement regarding the relief of (a) the most densely peopled province, (b) the most sparsely peopled province in the South of China.

(c) Compare the average density of population in the provinces of S. China with that of the Yang-tse basin.

2. Comment on the names: Yunnan, Kwangtung, Kwangsi, Nan-shan, Wuchow.

3.

TRADE OF HONGKONG.

Total Trade = £85,000,000.

Imports.	Percentage.	Exports.	Percentage.
Foodstuffs - -	40	Foodstuffs - -	23
Piece goods - -	13	Treasure - -	10
Oils and fats - -	6	Piece goods - -	8
Metals - - -	4	Oils and fats - -	7
Chinese medicines -	4	Metals - - -	4
Treasure - - -	5	Tobacco - - -	3
Other things - -	28	Other things - -	45

Characteristics. Of the six provinces in Southern China, four—Yunnan, Kweichow, Kwangsi and Kwangtung, are in the basin of the Sikiang, and two, Fokien and Chekiang, are unconnected with any great river system. The area is almost wholly mountainous and sparsely populated, except in Kwangtung and Chekiang, where rich deltaic rice-lands support dense populations. The inland and most mountainous provinces, Yunnan and Kweichow, possess great mineral wealth; the coast provinces possess many excellent harbours and thriving ports.

The climate is suited to the growth of tropical food-products, such as rice, sugar, tea, maize, and of other tropical products, such as silk, cotton, hemp, indigo. As a hot moist summer is followed by a dry cool winter without frosts, as many as three crops can be grown annually from the same plot in the lowland flood plains. Even in this, the tropical part of China, the winter climate is sufficiently cool

to counteract the enervating effect of the humid summer conditions.

The Sikiang. The Sikiang, or "west river," is navigable for ocean steamers to Whampoa, 10 miles below Canton, and by smaller steamers, drawing 8 feet, to the rapids at Wuchow;

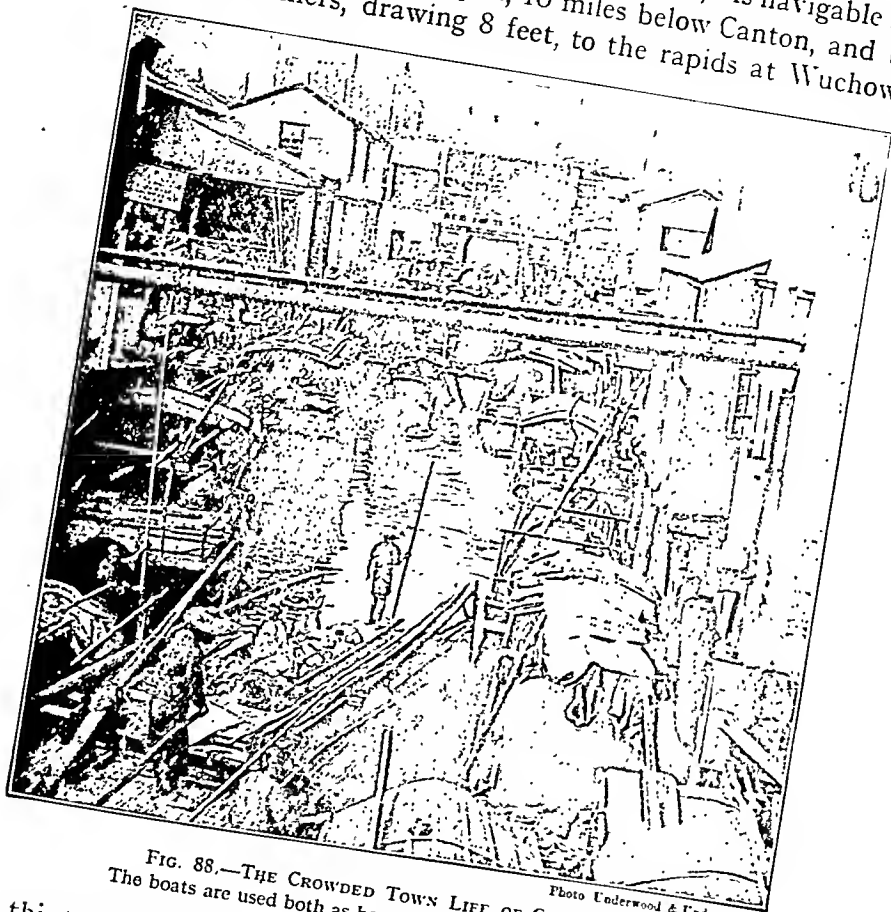


FIG. 88.—THE CROWDED TOWN LIFE OF CANTON, CHINA.
The boats are used both as homes and as carriers of merchandise.

at this town the flood level rises 70 ft. and the houses are built on piles. The northern distributary on which Canton stands is called the Pearl river, and the estuary the Tiger's Head. The western distributary is navigable for junks only. The islands of the delta support a large population and are frequently flooded. The intervening water channels and the

Pearl estuary are still infested by pirates, and navigation up to Canton, except in large ships, is attended with danger.

Yunnan. Yunnan is an immense limestone plateau, ribbed by spurs of the Tibet plateau and dissected in the same direction by river gorges—in some cases 3000 feet deep. Although crossed by the northern tropic, the province has a cool and healthy climate suited to Europeans, with perpetual sunshine and freedom from frosts. Sheep, goats and buffaloes are numerous; tanning is an important industry, and dressed skins and hides a prominent export. There are patches of alluvial soil in the gorges, but the air is so stagnant that farmers return to the plateau to sleep.

The chief wealth of the province lies in its deposits of copper, silver, lead, iron and tin. The export of tin from the Mengtse district is one-twentieth of the world's output (p. 138). The French railway to Laokai (Fig. 76) has recently been extended through Mengtse to Yunnan, and the Burmese railway from Mandalay to Kunlong Ferry is nearing completion.

The chief towns are Yunnan and Tali, both bazaar towns at the centres of fertile plains. The population of Yunnan are largely Miaotse—an older race than the Chinese—found also in the adjoining province of Kweichow.

Kweichow. Although Kweichow is at a lower altitude, it is in many respects the counterpart of Yunnan. The mineral wealth is practically untouched—quicksilver alone is exported. Skins, furs and silk are other exports. Kweiyang (100) is the capital. In recent years there has been a steady inflow into Kweichow of settlers from Szechuan.

Kwangsi. Kwangsi occupies the middle Sikiang basin, and is extremely mountainous and desolate. River-steamers reach Wuchow, a busy port at the junction of the Kweikiang. This river valley, containing a dense population, is connected by canal to the Siangkiang, and is an important trade route. The routes to Yunnan are infested with brigands. The chief town and capital is Kweilin (cassia grove).

Kwangtung. Kwangtung includes the lower course and deltaic lowlands of the Sikiang; the remainder of the pro-

vince is mainly mountainous. The coast is everywhere rocky, with granite headlands sheltering excellent harbours. North of the river the land rises to the Nanshan. The Pei river is navigable for a considerable distance, and paved roads, lined with rest-houses, lead from its upper waters over the Cheling and Meiling Passes into Hunan and Kiangsi. The chief products are silk, rice, sugar, tea, oranges, and grass-cloth. Coal is plentiful, and is mined in the Pei valley, behind Canton, and along the Gulf of Tongking.

Canton (900), on the Pearl branch of the Sikiang, manufactures woollen, cotton, and silk fabrics, while its smaller products, such as tortoise-shell and paper articles, are known all over the world. It is the largest city in China. About 300,000 of its population live in boats on the river and are engaged in fishing and petty trading; they belong largely to a race known as Tungkas. Swatow, five miles up the Han river, exports sugar and camphor; emigrants leave yearly in large numbers for Indo-China, the East Indies, and the Queensland sugar fields.

Hongkong, an island at the eastern entrance of the Sikiang, was acquired by Britain in 1841, and a portion of the adjacent Kowloon peninsula has since been leased. The total area under British rule is about 400 square miles, with a population of 470,000, of which about 370,000 are in Hongkong. The island of Hongkong is a lofty and irregular ridge almost destitute of vegetation, and separated from the mainland by a narrow passage half a mile wide. The capital Victoria, extending for five miles along the north shore of the island, is a beautiful and well-built modern city, rising landwards nearly 1000 feet. The waters between the city and Kowloon, about 10 sq. miles in extent, constitute one of the finest harbours in the world. In addition there are excellent naval yards and docks capable of holding the largest vessels. The port is free; its only drawback is the frequency of typhoons.

Fokien. Fokien is a mountainous province with parallel ranges trending with the highly indented coast. All the

river valleys are intensely cultivated, the slopes being terraced to their summits. Tea is the chief product, the centre being the upper Min, especially along the foot of the Bohea Mountains.

Sea-fishing engages a large number of people, whose venturesome spirit is further displayed in the steady outflow of emigrants. Fuchow (624) the capital, thirty miles up the Min, has a considerable silk and woollen industry, but its trade as a port is exceeded by Amoy (114) on a sheltered island.

Chekiang. Chekiang is mountainous in the south, where it strongly resembles Fokien as regards relief, climate, products, and people; in the north the area is a low-lying plain with a wonderful network of canals and navigable streams. The chief products are silk and tea; the former is largely produced in the region round Hangchow Bay, where the climate and soil are peculiarly suited to mulberries. Hangchow (594), the capital, on the Tsientang, is the most beautifully situated city in China, but its usefulness as a port is impaired by the 15 feet tidal bore that rushes far up the river. Its chief export is green tea. Ningpo (450) near the south coast of Hangchow Bay, is the chief port, its exports including green tea, cotton and manufactured paper goods. Both are open ports.

EXERCISES.

1. Write a note on Yunnan.
2. Account for the importance of Canton.
3. Estimate the importance of Hongkong to Britain.
4. Write notes on (a) Bohea tea, (b) Meiling Pass, (c) the Tiger's Head.
5. Point out in what respects the basin of the Sikiang differs from that of the Yang-tse as regards (a) products, (b) people, (c) navigability of the river.
6. Write a short account of the coast of China.
7. Draw a sketch map to illustrate the position and trade of Canton. This map should contain routes of goods, names of goods being inserted.

LESSON XXVII.

JAPANESE EMPIRE: EXTENT AND CLIMATE.

	Area in thousand sq. miles.	Population in millions.	Population per sq. mile.
Honshiu - - -	87	48	550
Shikoku - - -	7	5	700
Kiushiu - - -	15.7	9	573
Hokkaido (Yezo) - -	30.5	1	33
Chishima (Kurile Is.) -	6.1	—	—
Riukiu (Luchu Is.) -	0.9	—	—
Other islands - -	1.3	—	—
Total Japan Proper -	148.5	64.8	434
Chosen - - -	86	19	220
Taiwan - - -	13.8	4	300
Karafuto - - -	13.1	.2	15
Total Japanese Empire	261.4	88.4	340

1. (a) In which of the Japanese islands is the population denser than in (1) England, (2) Ireland?

(b) By means of rectangles compare the areas of the six largest members of the Japanese Empire with that of Ireland.

(c) What fraction (roughly) of the total population of the Japanese Empire is in Honshiu? What fraction of the area of the Empire is in Honshiu? Which is the most important island?

2. The subjoined tables give climatic statistics of six sea-coast towns in Japan Proper—arranged in order of latitude (Fig. 90). Answer the following questions:

(a) Which is (1) hottest month, (2) coldest month?

(b) State how the temperature varies (1) from south to north, (2) throughout the year.

(c) Compare the July-August temperatures of Niigata and Tokio; also the January-February temperatures. Account for the facts.

CLIMATE OF JAPAN.

	TEMPERATURES (F.).						RAINFALL (Ins.).					
	Nagasaki.	Osaka.	Tokio.	Niigata.	Hakodate.	Nemuro.	Nagasaki.	Osaka.	Tokio.	Niigata.	Hakodate.	Nemuro.
January -	43	40	37	35	26	23	3	2	2	4	2	1
February -	39	39	38	35	27	22	3	2	2	5	2	1
March -	49	45	44	40	33	27	5	4	4	4	3	2
April -	58	56	55	51	44	37	8	6	5	4	3	3
May -	64	63	62	59	51	44	7	5	6	3	3	4
June -	71	71	69	67	58	49	12	8	6	5	4	4
July -	78	78	75	75	66	58	10	7	6	6	6	3
August -	80	81	78	78	71	63	7	4	6	5	5	4
September	74	74	71	71	63	60	8	7	8	7	7	5
October -	66	62	60	60	54	51	5	5	7	6	5	4
November -	56	54	51	48	41	40	3	3	4	7	4	3
December -	46	43	41	40	32	29	3	2	2	9	3	3
Average -	60	59	57	56	47	41	75	55	60	72	46	33
Abs. Max. -	98	100	98	104	92	89	164	140	146	237	191	156
Abs. Min. -	23	19	16	15	-7	-8	164	140	146	237	191	156
												Total for year. Rain and snow (days).

3. Examine the rainfall statistics.

(i) Draw rainfall curves for Niigata and Tokio (on the same piece of squared paper). Account for the differences by referring to the sites of the towns.

(ii) Explain why Niigata has so many rainy and snowy days.

(iii) Which are the two wettest months at Tokio and Niigata?

4. Estimate the distance from Kamchatka to the southern end of Taiwan (Formosa).

Extent. The three island-groups of the Japanese Empire stretch festoon-like along the eastern coast of Asia for over 2000 miles. The islands have a lower latitude than any part of Britain; the central group, together with the dependent peninsula of Korea, have the latitude of the Mediterranean and the southern United States. Until 1895 the empire consisted of the three island festoons; in that year Taiwan

(Formosa) was ceded by the Chinese, ten years later Karafuto (Southern Sakhalin) was ceded by Russia, and in 1910 Chosen (Korea) was annexed. This total area is rather more than twice that of the British Isles.

Relief and Structure. The Japanese islands mark a long line of weakness in the earth's crust. Within it the seas are comparatively shallow, without, the Pacific is remarkably deep. Off Hondo the Tuscarora Deep sinks steeply to a depth of five miles, while the rock-mass of the island rises with much the same gradient (1 in 20) to a height of two miles. This tremendous difference in level constitutes a condition of unstable equilibrium, and consequently in the steep sea-floor or continental slope there is frequent rock movement which manifests itself in violent earth tremors or quakes. The districts behind Nagoya, Tokio and Nagasaki experience, on an average, an earthquake every day. Sometimes the quakes are accompanied by a disturbance in the sea; first the sea recedes a short distance as though the sea-floor had sunk, and then returns as a wave of water which may sometimes invade the land and cause great damage. In 1854 and again in 1896 practically all the coast-towns from Sendai to the Tsugaru Strait were overwhelmed by such a wave and destroyed.

The Pacific shore of the Japanese islands is a fault line and marks the true coast of the continent; subsequent faulting along the present Asiatic coast line from Bering Strait to Korea allowed the ocean water to submerge everything except the present long chain of islands.

Further evidence of crust-weakness in this region is afforded by the large number of volcanoes. The east coast of Kamchatka is lined by ten active cones, the Kuriles contain over fifty, of which nine are active, while silent cones dot the central ridges of all the four large islands of the central group. Of the active volcanoes the most famous are Asama-yama in Hondo and Aso-san in Kiushiu; the beautiful cone Fuji-yama (12,400), now silent, figures largely in Japanese works of art.

The islands are extremely mountainous, the ranges trending mainly with the coast, to which they send off spurs terminating in rocky headlands. *Hot springs* (onsens) and warm lakes are common in the mountain region. The hill-slopes,

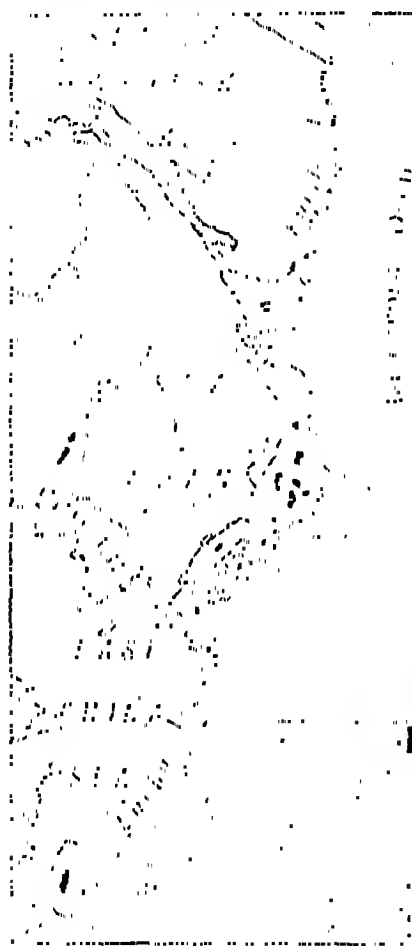


FIG. 89.—JAPANESE ISLANDS: RELIEF.

suffering intense denudation in the summer rains, are but scantily covered with soil, affording over large areas insufficient depth even for grass.

Coastal Plains. Agriculture is confined to the coastal plains where the short swift rivers have built broad deltas. The soil, weathered from the granites of the central ranges, is a poor mixture of sand and clay.

Climate. The situation of the main group of islands in middle latitudes on the eastern side of a large land mass gives them a *continental climate* in winter, while their situation to the west of a huge ocean gives them an *insular climate* in summer. Relief and ocean currents contribute to this result.

Summer conditions. As the mountain ranges are at right angles to the direction of the summer monsoon, heavy rains fall, especially on the windward slopes and plains. Heaviest rains fall in June and early July and again in September, the former season being called the *Baiu* and the latter the *Dogo*. A warm current, the *Kuro Siwo* ("black current"), flows along

the eastern Asiatic coast from the Tropics (Fig. 90). This current, 40 miles broad, 100 feet deep, and at a temperature 10° above that of the surrounding ocean, washes the eastern shores of Kiushiu, Shikoku and Honshiu, and continues thence across the Pacific as a broad drift. The monsoon, passing over this warm water, adds considerably to its load of water vapour, and thus the summer rainfall is increased. The temperature on all the coasts, except Hokkaido, is above 60° F. from June to October (five months).

Winter conditions. The winds at this season are from the frozen wastes of Siberia. Crossing the Japan Sea they pick up moisture and deposit it as snow and rain on the westward and northern slopes (p. 206). On the sheltered eastern side of the island the days are bright and sunny with a low thermometer at night. The temperature falls considerably in a northward direction, being quite 10° lower at Hakodate than at Tokio. This is due in a great measure to a cold current of water—the Bering current—which, originating in the Arctic Ocean, passes along the shore of Siberia and enters the Japan Sea, making its influence felt from shore to shore as far south as Shanghai (Fig. 90). Split by Hokkaido, an

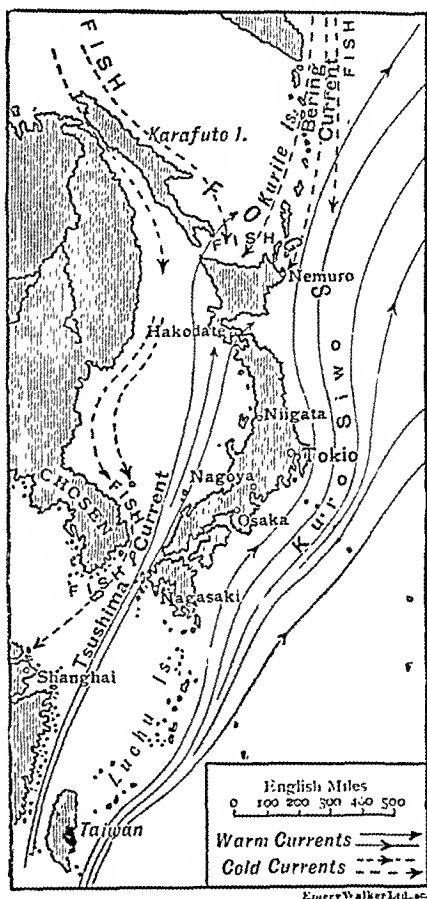


FIG. 90.—JAPANESE ISLANDS: CURRENTS.

eastern portion washes the Pacific shore of that island and dies away off northern Honshiu in about latitude 39° N. The meeting of the two currents produces dense fogs round Hokkaido and northern Honshiu—the former island being icebound on the north and east for three months. On the other hand, the warm Kuro Siwo exercises little influence over the winter climate of southern Honshiu, Shikoku and Kiushiu, as the winds blow off shore.

Japan lies in the Pacific typhoon zone (Jap. taifu = big wind); from ten to fifteen typhoons visit the Japanese islands annually, causing great damage to property (p. 165).

EXERCISES.

1. The Japanese islands mark the line of a former Asiatic coast. Comment on this.

2. What explanations can be given of the frequency of earthquakes in Japan?

3. Account for the fogs round Hokkaido.

4. Write notes on (a) Kuro Siwo, (b) Tuscarora Deep.

5. What is a typhoon? In which latitudes are they most frequent?

6. On which side of Honshiu would you prefer to live? Give reasons.

7. Draw a map of the North-East Coast of both North America and Asia, so as to show a similarity of currents, climate and products round Newfoundland and Hokkaido.

LESSON XXVIII.

JAPAN: PRODUCTS. TRADE. PEOPLE.

1. (a) Fill up the percentage column in the following table.

(b) Express diagrammatically the percentage values in the export table by means of rectangles 1 cm. wide. Use a vertical scale 1 cm. = 5 per cent.

(c) Express diagrammatically the percentage values of total exports to U.S.A., China, Hongkong, Great Britain.

(d) To which country do most *manufactured* goods go?

(e) Which country takes most *raw* materials?

EXPORTS.

Article.	Value £ millions.	Per- centage of Total.	Countries to which Exported.
Raw silk -	78		U.S.A. (75).
Cotton tissues	41		China (15), British India (11).
Silk tissues -	15		Australia (2.6), British India (2.5).
Potteries -	3.7		U.S.A. (1.5).
Sugar - -	3		China (2).
Cotton yarns -	2.6		British India (1.3).
Wheat flour -	2.5		
Paper - -	2.5		
Coal - -	2.4		China (1).
Other things -	61		
Total - -	214		U.S.A. (91), China (35), British India (19), N.E.I. (9), Great Britain (6), Hongkong (6).

IMPORTS.

Article.	Value £ millions.	Per- centage.	Countries from which Imported.
Raw cotton -	57		U.S.A. (27), British India (23).
Iron - -	16		British India.
Machinery -	12		U.S.A. (4), Great Britain (3).
Wool - -	10		Australia (10).
Wood - -	9		U.S.A. (7).
Beans and pease - -	8		Kwantung (6).
Oil cake - -	8		China (4).
Wheat - -	7		
Other things -	94		
Total - -	221		U.S.A (65), British India (29), China (21), Great Britain (15), Germany (16), Australia (13).

2. (a) Fill up the percentage column in the table showing imports.

(b) Draw three rectangles, with same base, to show relative amounts of food, raw materials and manufactures in the above table of imports.

(c) Show diagrammatically the total imports into Japan from British India, U.S.A., Great Britain, China and other countries.

JAPANESE TRADE (11 years, 1915-1925).

(£ millions.)

	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.
Imports -	53	76	104	167	217	234	161	189	198	245	257
Exports -	71	113	160	196	210	195	125	164	145	181	230
Total -	124	189	264	363	427	429	286	353	343	426	487

3. Draw curves to illustrate the above table, showing the growth of Japanese trade in the period 1915-25.

Products. Owing to the mountainous nature of the country only one-tenth of the total area is under cultivation, or roughly one-fourth of that under cultivation in Britain. Unlike Britain, however, the country is practically self-supporting—the imports of food-stuffs amounting annually to less than £6 million. Yet this fact is not due to the richness of the soil, for the swift rivers deposit gravel, while the fine mud mainly goes out to sea. There are three chief causes why the country is self-supporting:

1. The absence of good mountain pasture makes cattle and horses scarce; hence farming operations are carried on chiefly by human labour, and thus every square foot of ground receives great care and attention.

2. Two crops can be produced annually off the same plot, the growth of all plants being very rapid owing to the hot season being also the wet season.

3. Wheat, barley and oats are produced, but rice is by far the most important food crop, and it is greatly due to the universal use of this prolific and sustaining cereal as an

article of food that so little food-stuffs has to be imported, although by this reliance on rice the physique of the people suffers.

The mountain forests of bambop, cedar, pine, lacquer and camphor are a considerable source of wealth, and provide the materials for many industries such as the making of



Photo F. R. H. Garrett.

FIG. 91.—TYPICAL JAPANESE LANDSCAPE.

Showing terraced fields for rice and typical shallow river bed.

matches (local sulphur being plentiful), paper, wood-pulp, toys and furniture, the latter being highly polished by lacquer—a mixture of camphor and the gum exuded from the lacquer-tree.

Winter clothing is made from imported wool and woollen cloth, since sheep are scarce, and most of the raw cotton used in local factories is also imported. For her silks Japan relies entirely on her own enormous supplies of raw material, which,

in spite of the fact that almost everyone wears silk in summer, constitutes one-fourth of the total export of the country.

The shore waters are rich in fish, which with soya beans and rice are the staple foods. Dried fish takes the place of animal manure in many coast districts where cattle are scarce and fish plentiful. The fishing industry has now reached large proportions, giving employment to two million people and half a million vessels, while the annual catch amounts to over £20 millions.

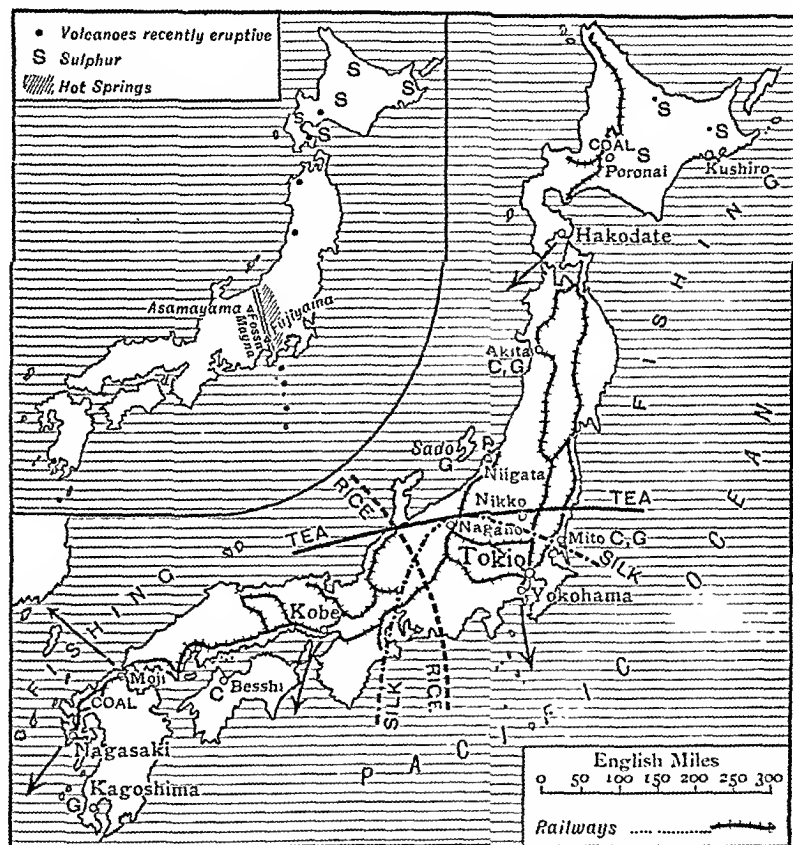
Tea is grown on all the lower hill slopes and is a universal beverage. Saké, an intoxicating drink, is distilled from rice.

As regards mineral wealth, the islands are specially rich in copper, sulphur and china-clay, and there are also deposits of coal, iron, gold, silver and petroleum. From copper and china-clay, by the characteristic expenditure of much patience and artistic skill, the Japanese make the bronze and porcelain ware for which they have so long held a high reputation. The coal is not only sufficient for local shipping and railways, but there is a considerable surplus, which is shipped chiefly to Singapore.

People. The Japanese, like the Chinese, belong to the Yellow or Mongolian race. Entering Honshiu from Mongolia they drove the natives (Ainus) northwards into Yezo, where a gradually dwindling number still remain. Subsequent fusion of the Japanese with other races, notably with Malays and Polynesians, has produced not only a divergence from the Chinese type but also a great variety of feature throughout the race. It is, however, in their mental and moral characteristics that they chiefly differ from the Chinese, due not only to race fusion but also to their life as an island nation. The Japanese possess the Chinese qualities of endurance, thrift, courage and disregard of death, but, unlike the Chinese, they are artistic, cleanly, and intensely patriotic. Above all, their minds are much more open to new ideas and they are quick to acquire knowledge.

Fifty years ago, the country, shut to outsiders, was ruled over by a number of feudal lords called daimios, each with

a retinue of *samurai* or warrior retainers whose services rendered them next in rank to their lords. Commerce and husbandry were menial pursuits. Then a remarkable change took place. In 1868 the people revolted; the daimios abandoned their feudal rights and the samurai were dis-



C=Copper G=Gold P=Petroleum ← Port

FIG. 92.—JAPAN: PRODUCTS.

banded; the country was thrown open to outsiders, and at once there began that whole-hearted adoption of Western ideas and methods which has put Japan in the forefront of the nations of the world.

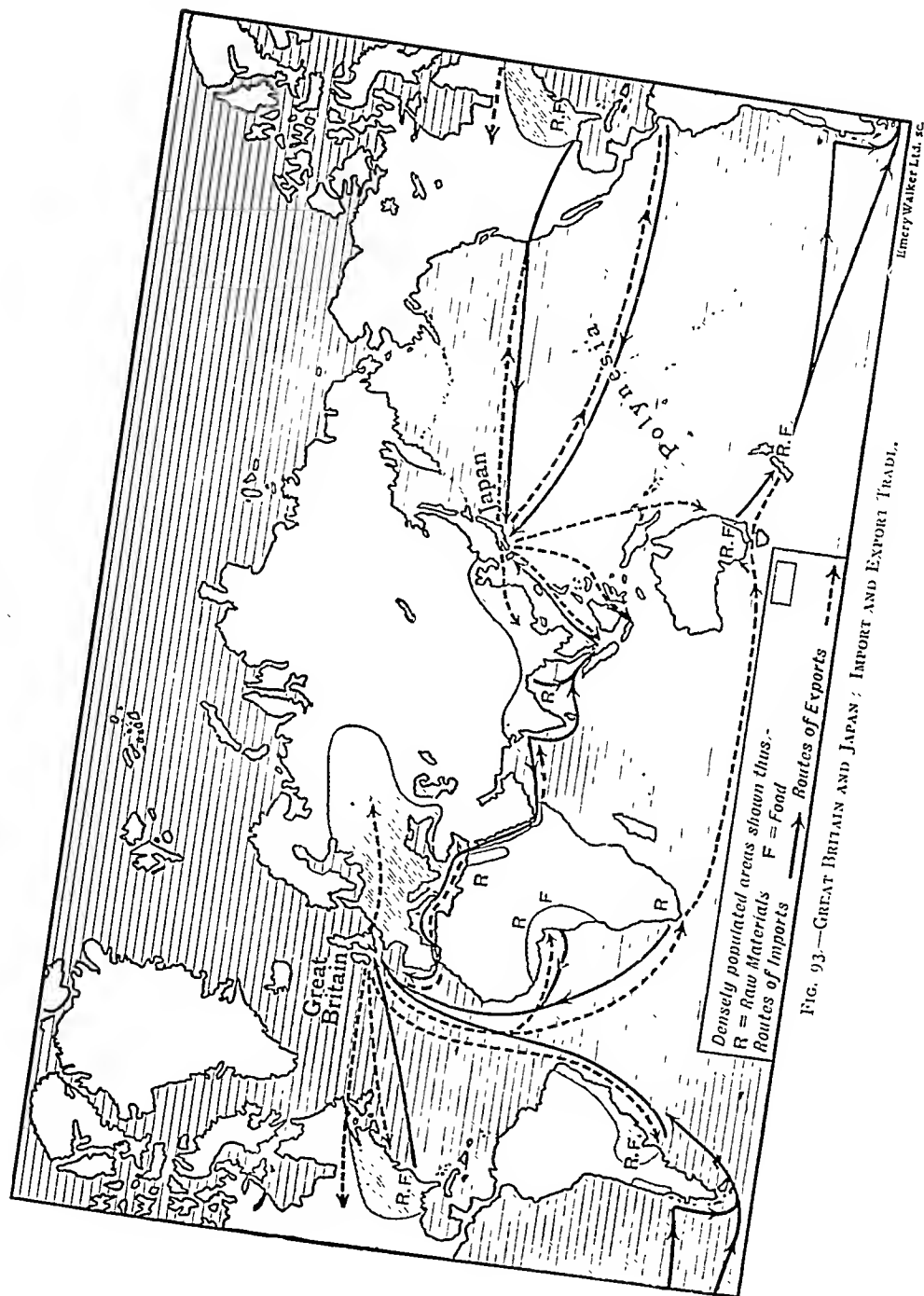
To-day Japan has a system of government similar to that of Great Britain. Other institutions copied from the West

are: a conscript army (ages 20 to 40), a large and efficient navy, largely built and wholly manned by Japanese, postal service, compulsory elementary education, railways, electric trams, etc. There are four state-aided universities of which Tokio, the largest, has over 5000 students and a staff of 400 teachers. The railway mileage is already over 13,000 in spite of the mountainous nature of the country and ready access to the sea.

Trade. The import and export trade of Japan is growing by leaps and bounds, due to the adoption of labour-saving appliances, large-scale methods of production, and to the increased power which education gives to a people. The Japanese are proud to call their country the Britain of the East, and in many senses the title is deserved. Japan is rapidly becoming, like Britain, a workshop to which raw products are brought, worked up into finished articles and then exported. As in Britain, motive power is abundant, while, in respect to wages, Japan is more advantageously placed than Britain, for, owing to the abundance of rice and millets in her own and the adjacent monsoon lands, cost of living is small and wages low. For instance, in the case of the 200 cotton mills now running in the country, the average figures are: annual running days = 320 (there are no Sundays in Japan), daily working hours = 19, daily wage = 3s. (man), 2s. (woman).

In respect to her maritime position Japan is not so well placed as Britain, for, as Fig. 93 shows, her markets and sources of raw material lie farther away. Of course China, with a population equal to that of the whole of Europe, lies near, but the wants of the Chinese are few; as for the United States, the populous parts lie on the side of the continent facing Britain and away from Japan.

From the tables at the beginning of this lesson it will be seen that the imports are headed by raw cotton, which comes largely from India. Since the annexation of Chosen (Lesson 30), great attention has been paid to cotton culture in that country, with a view to render Japan less



dependent on other countries for the raw material of her mills.

The exports are headed by raw silk, of which over 75 per cent. goes to the United States. This is a steadily growing

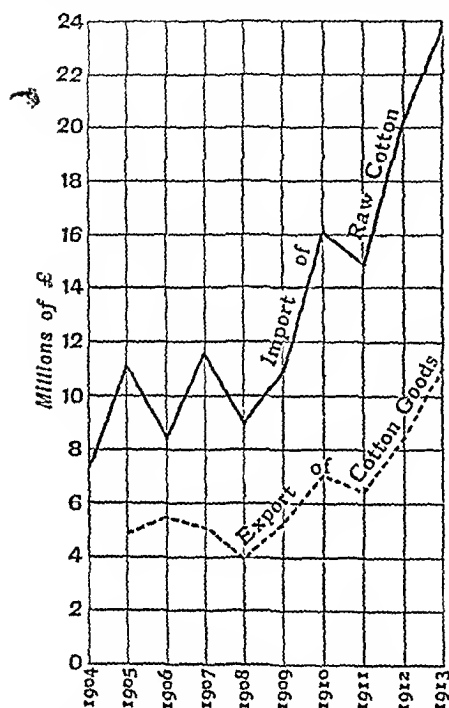


FIG. 94.—CURVE ILLUSTRATING THE GROWTH OF THE COTTON INDUSTRY IN JAPAN.

industry (p. 191). Japan is suited to the growth of mulberries, while the United States, growing yearly richer, offers an expanding market. The second export in point of value is cotton yarns and materials; the greater part of which goes to China, supplanting Lancashire cottons. The latter are yearly faced with growing competition in the East, especially the poorer quality of goods; as regards the finer counts Lancashire stands unrivalled, for her climate and technical skill enable her to produce cottons of the consistency of silk.

The growth of Japan's trade in raw and manufactured cotton (years 1904-13) is shown in Fig. 94. Its present magnitude is shown in the tables at the head of this Lesson.

EXERCISES.

1. Account for the fact that Japan can produce practically all the food she requires.
2. Write a short account of the cotton industry of Japan.
3. The Japanese claim to be the British of the East. How far is this true?
4. Give instances to show that the Japanese are an industrious, ingenious and ambitious people.
5. Compare the Chinese and Japanese in as many ways as you can.

6. Write notes on the Japanese revolution.

7. On a printed outline map of the world, indicate by red and black dotted lines the import (red) and export (black) trade of Japan. Write upon each line the names of the chief exports and imports.

LESSON XXIX.

JAPAN: MAIN ISLANDS.

TRADE OF YOKOHAMA AND KOBE.

IMPORTS.

Imports and Chief Countries of Origin.	Yokohama. £100,000.	Kobe. £100,000.
Raw Cotton (British India) - - -	31	138
Oil cake (Kwantung) - - -	14	10
Rice (French Indo-China) - - -	14	16
Sugar (Dutch East Indies) - - -	18	2
Wool (Australia) - - -	12	5
Machinery (United Kingdom) - -	12	16
Iron and manufs. (United Kingdom) -	15	31
Woollen manufs. and yarn (United Kingdom) - - -	4	9
Manures (United Kingdom) - -	10	11
Total Imports - - - -	214	308

EXPORTS.

Exports and Chief Countries	Yokohama. £100,000.	Kobe. £100,000.
Raw silk (U.S.A) - - - -	20	—
Silk Textiles (India) - - - -	35	2
Copper (China) - - - -	10	14
Cottons (China) - - - -	—	8
Cotton yarn (China) - - - -	3	34
Cotton articles (India) - - - -	3	6
Straw plait (U.S.A.) - - - -	—	6
Hemp braids (U.S.A.) - - - -	7	4
Total Exports - - - -	323	153

1. (a) What fraction (roughly) of the total Japanese trade passes through Yokohama and Kobe? (See previous lesson.)

(b) What fraction of the total Imports and Exports passes through each of these ports?

(c) Examine the cotton import and the cottons export. What becomes of the greater part of the manufactured cotton?

(d) Which district of Japan must be the chief cotton manufacturing area? Give reasons for your answer.

(e) Which district produces and manufactures most silk? Give reasons for your answer.

(f) To which town will the greater part of the cotton yarn be shipped?

(g) From which copper mines does Kobe receive copper for export?

The Kuriles. These islands, thirty-one in number, are so called because of their smoking volcanic cones (Russian, *kurity* = smoke); the Japanese name is *Chishima* ("thousand isles"). Enveloped in fog and surrounded by rocky,

the outside world. The few hundred inhabitants live mostly by hunting and fishing (salmon). The hill slopes are well wooded, and bears are numerous. *Iturup* is the chief island.

Karafuto. Karafuto is the portion of *Sakhalin*, south of lat. 50° N. The climate is severe, the summers being wet and cold, due to ice from the Okhotsk sea. The chief industry is *herring fishing*, the herrings being almost entirely converted into fertilisers. The island is the chief timber reserve of the Empire, and is being rapidly exploited; over 150,000 tons of wood-pulp were produced in 1930, while acetic acid, charcoal, and wood-tar are obtained by destructive distillation of larch trees. There are three large unworked coalfields—one covering 120 sq. mls.—and the island is equally rich in petroleum, over 600,000 tons being produced in 1929.

Hokkaido or Yezo. The mountain ridges represented by the Kuriles and Sakhalin meet in Hokkaido, to which they would again be joined by a slight rise of the sea floor; the deep *Tsugaru Strait* has apparently existed for long geological

ages, for the flora and fauna of Hokkaido resemble those of Sakhalin and differ from those of Honshiu. The winter climate is very severe. Agriculture is confined to the south. The chief industries are fishing (herring and salmon), lumbering, and collecting seaweed for exportation to China. A railway from Hakodate (88) passes through extensive coalfields near

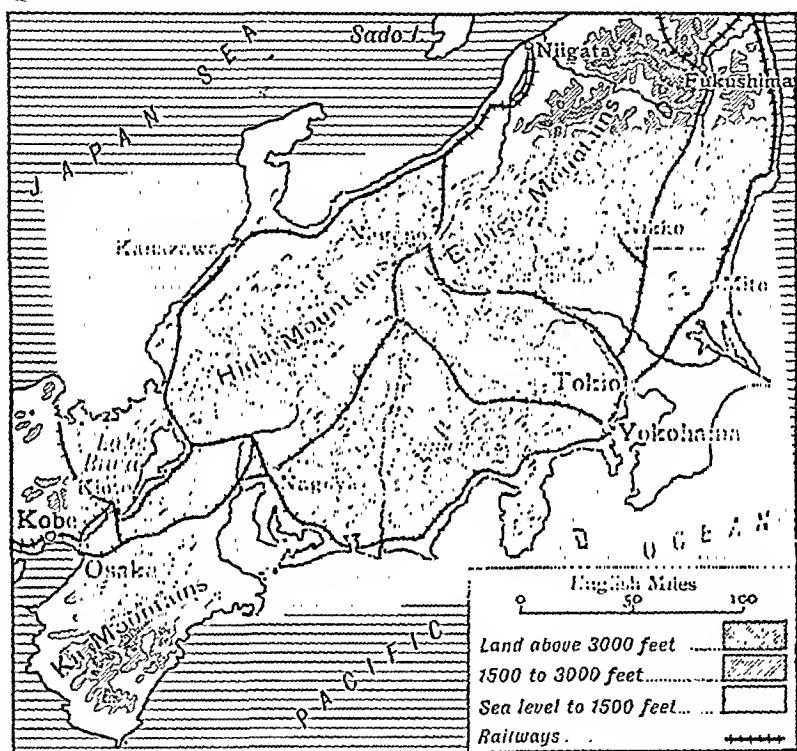


FIG. 95.—CENTRAL HONSHIU.

Emery Walker Ltd. sc

Poronai. Sulphur is found in the central parts of Hokkaido and exported from Kushiro. The population of the island includes nearly 20,000 Ainus, a hairy, copper-coloured race gradually disappearing.

Honshiu. This island, sometimes called Hondo or Mainland, is the most important part of the Japanese Empire, and includes one-half of the total population; or two-thirds, if Chosen and Taiwan be excluded.

From Tsugaru Strait in the north a high central range and at intervals two flanking ranges extend to the south coast, where they form the Kii and other smaller peninsulas. A single, broad, much eroded ridge traverses the western portion of Honshiu to its end at Shimonoseki Strait.

The mountains of central Honshiu were once the centre of great volcanic activity and contain many cones of which only Asama-yama (8300 ft.) and Tateyama (10,300 ft.) show any signs of activity. Fuji-yama (12,600 ft.), the highest and most beautiful cone, and a lodestone to sailors 100 miles to sea, stands at the southern end of the Fossa Magna or great ditch. This ditch, now largely filled with volcanic matter, was a great cleft in the earth's crust running to the north coast opposite the island of Sado and now bordered by a double line of cones (Fig. 92).

The surrounding region known, east of the ditch, as the Japanese Alps, abounds in hot springs (onsens), of which there are altogether 1000 in Japan. Some are sulphur springs, some chalybeate, others are merely hot water which can be used for cooking and other domestic purposes. Earthquakes are of daily occurrence in the region behind Nagoya and Tokio, and slightly less frequent in other parts of the island; hence timber, rather than bricks or stone, is largely used for building houses, being safer and, at the same time, inexpensive.

Products, communications and towns. Honshiu is most densely populated in the centre south of a line drawn through Kyoto and the Tokio plain. There is also a dense population along the northern coast from Kanazawa to Niigata. The area under rice is practically equal to that under all the other food crops, which include barley, wheat, millet, and soya beans. Cattle, sheep-rearing and cotton culture give way to food crops on all the fertile lowlands. Tea is grown chiefly between Osaka and Tokio (Fig. 92). Silk is produced in the plains and valleys between Nagoya and Tokio, but chiefly in Nagano province, where also most spinning towns are situated. The exported raw silk is rather coarse. The

lacquer tree grows in the uplands of N. Honshiu. Copper is mined in large quantities near Nikko (Ashio mines), Mito, and Akita; gold at Mito, Sado and Akita; while near Niigata are extensive petroleum fields. Iron-ore is mined at various places, and coal near Fukushima (Fig. 95).

The capital, Tokio (2,033), is a large uninteresting city at the head of the shallow Tokio Bay, at the entrance to which

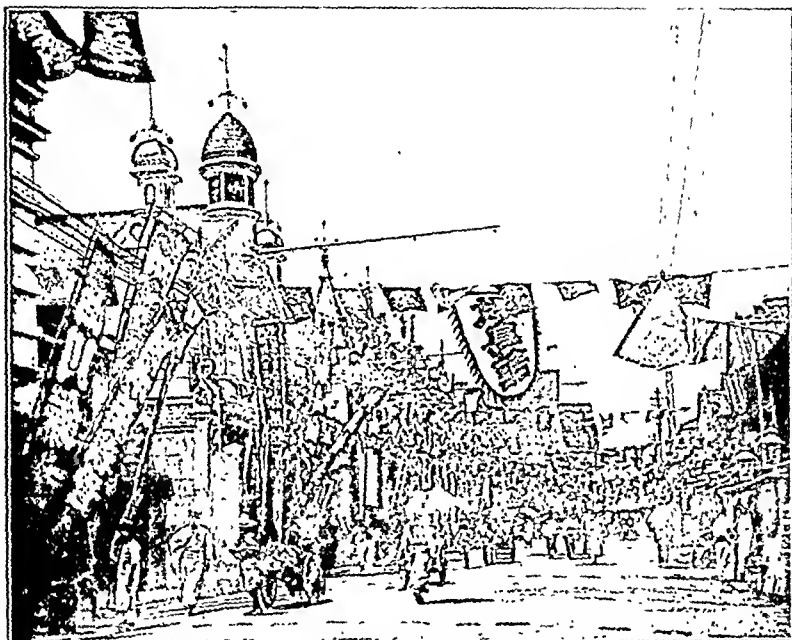


FIG. 95.—A STREET SCENE IN KOBE DURING A FESTIVAL.

stands Yokohama (411), the largest port in the empire. Tokio possesses a famous university, and is the seat of an extensive silk, porcelain, and enamel industry. Osaka (2,000) is the centre of the cotton spinning industry. Kobe (644), with deep water, is its port. Inland, near Lake Biwa, stands Kioto, the old capital, and the most interesting city of Japan; it manufactures porcelain and artistic goods.

Shikoku. This island is separated from western Honshiu by the famous Inland Sea, which, studded with wooded

islands and flanked by high richly-clothed mountain ranges, "stands for beauty and loveliness absolutely without a rival in the world." The Kuro-Siwo gives Shikoku an unusually mild climate. Only the coastal fringes are cultivated, the most populous strip being along the shores of the Inland Sea. In addition to tea and silk this strip grows annually two crops of rice, and is densely populated. Silk is woven in the north-

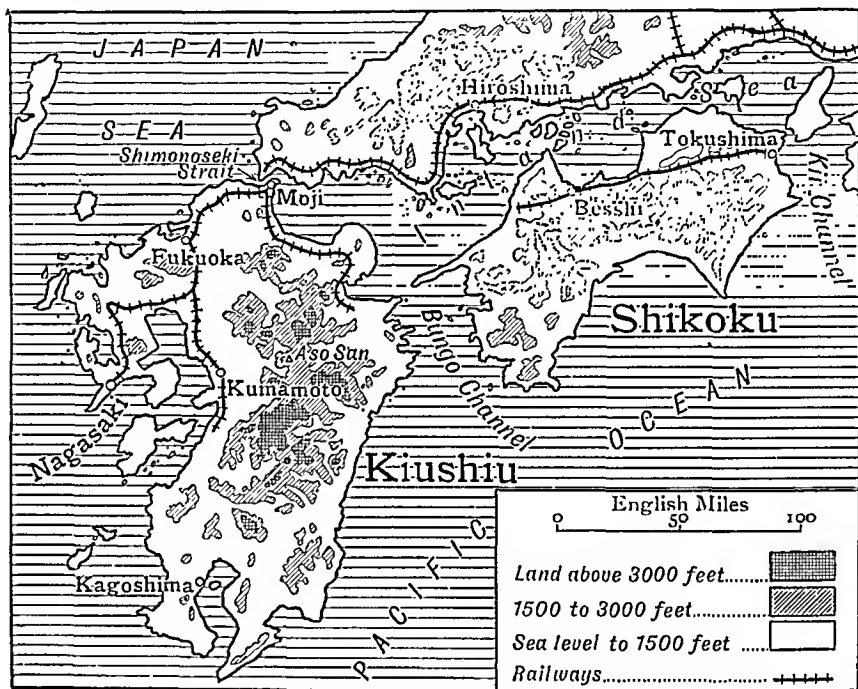


FIG. 97.—SHIKOKU AND KIUSHIU.

east at Tokushima, while in the north-west are the Besshi copper mines.

Kiushiu. Kiushiu, like Shikoku, is extremely mountainous. The much broken central range, 3000 to 6000 feet in height, contains many volcanoes, some of which are still active. Aso-san, the largest of the active volcanoes, contains over 100 villages in its outer crater. The island enjoys an equable climate, and food crops grow luxuriantly. Gold is found near Kagoshima, while in the north behind Nagasaki are extensive

deposits of coal. To this fact and to its excellent harbour and position is due the importance of the latter town, which was for two hundred years the only port at which foreigners were allowed to land (Fig. 98). It exports coal, camphor and vegetable wax. There are extensive shipbuilding yards and

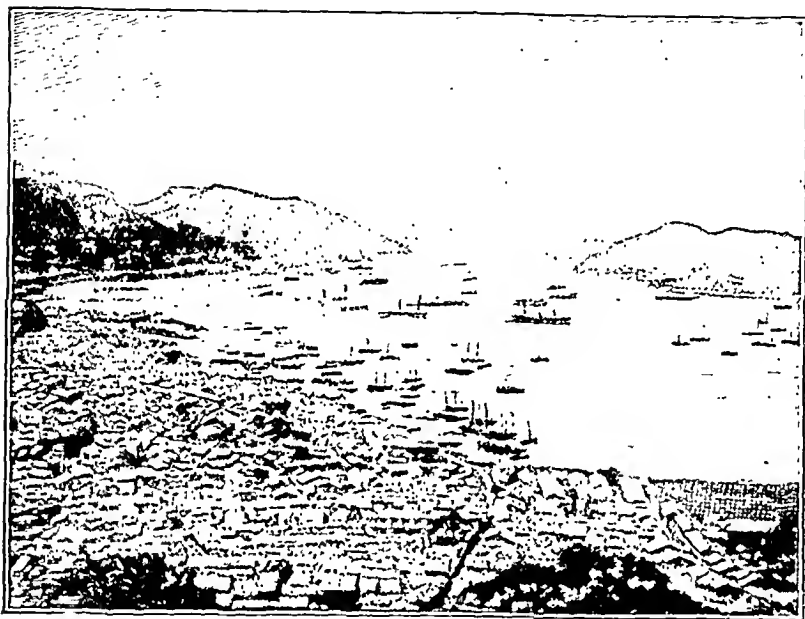


FIG. 98.—NAGASAKI HARBOUR.

engineering works at the town. Moji, at the entrance to the inland sea and facing Chosen, does a larger import and export trade.

EXERCISES.

1. Discuss the appropriateness of the name "Kuriles."
2. Write a short note on (a) the products, (b) the inhabitants, of Hokkaido.
3. Write a short note on the hot springs of Honshiu.
4. Why are (1) Japanese bridges so high? (2) Japanese houses made of wood?
5. Write notes on (a) Osaka, (b) Yokohama, (c) Nagasaki.

6. Give instances of Japanese manufactures, stating in each case why the industry is so extensively carried on in Japan.

7. What is the Inland Sea? Discuss its usefulness.

8. Draw a map of Honshiu. Insert names of the six chief towns and three ports. Indicate the chief region in which each of the following industries is carried on: silk weaving, copper mining, cotton spinning.

LESSON XXX.

CHOSEN (KOREA) AND TAIWAN (FORMOSA).

TABLE I.

Country.	Area (sq. miles).	Population.
Chosen - -	86,000	19 millions
Taiwan - -	13,839	4 "

1. (a) Find the density of population of Chosen, and Taiwan.

(b) Compare the results with the population density of Japan.

TABLE II. TRADE OF CHOSEN (1930).

Imports.	£100,000.	Exports.	£100,000.
Metals and manufs. thereof	16	Rice - -	180
Rice (Siam) - - -	14	Beans - -	24
Millet - - - -	25	Cotton - -	60
Paper and manufs. - -	8	Fish - -	14
Coal and coke - - -	11	Cow hides -	3
Sugar - - - -	9	Iron - -	7
Cotton and yarn - -	44	Timber - -	5
Total Imports - -	400	Total Exports	360

2. Examine the list of exports in Table II.

(a) What is the general nature of the exports?

- (b) What kind of country would you expect Chosen to be ?
 (c) Point out how your answer to (b) is supported by the list of imports.

3. Examine the list of imports.

- (a) What is their general nature
 (b) Account for the appearance of rice in both lists.
 (c) Mention any imports that Japan can supply.

TABLE III. TRADE OF CHOSEN (1907-13).
 (£10,000.).

BEFORE ANNEXATION.				SINCE ANNEXATION.			
Exports.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Rice - -	76	65	55	63	53	75	145
Raw cotton -	1	1	3	3	3	4	9
Total Exports -	170	141	162	199	189	210	309
Total Trade -	586	551	529	597	729	880	1025

4. (a) How did annexation affect the trade of Chosen in rice and raw cotton ?

(b) Compare the figures for 1913 with those for 1930 given in Table II.

TABLE IV. TRADE OF TAIWAN (1930).

Imports.	£100,000.	Exports.	£100,000.
Opium - - -	1	Sugar - - -	2
Rice - - -	10	Coal - - -	4
Soya bean - - -	4	Tea - - -	10
Sugar - - -	2	Camphor - - -	2
Oilcake and beans -	13	Alcohol - - -	2
Timber - - -	3		
Total Imports -	65	Total Exports -	34

5. Examine the above table, and answer the following questions:

- (a) Express the exports diagrammatically by rectangles.
- (b) What is their general nature?
- (c) Which of the imports will be from Japan?
- (d) What reasons can you give for the large import of (i) opium, (ii) oilcake and beans, (iii) rice?
- (e) Account for the large import of fertilisers by reference to the presence and absence of certain articles in the list of exports.

CHOSEN (KOREA).

Area and relief. Chosen has roughly the direction, length and area of Great Britain, but it lies 17° (1100 miles) nearer the equator. Its northern boundary is formed by the Oryoku (Yalu) and Toman (Tumen) rivers, both rising in Mt. Hakuto (Pakusan), an extinct volcano—whose white, tufa-covered cone is an object of reverence to both Koreans and Chinese. The continental portion of the country contains high fold mountains; the peninsula is divided by a granitic range. The eastern portion, little indented, has deep inshore water and several good ports. The western portion is divided by spurs into deep, well-wooded valleys, ending seawards in level plains usually flooded at the period of the rains. The rivers draining the slopes, although as a rule containing rapids, are freely used for small traffic. The western shore is studded with islands, some of which are inhabited.

History. Chosen became an integral part of the Japanese Empire in 1910, although, to a great extent, her affairs had been managed by the Japanese for five years previously. The inhabitants are Mongols, probably of the Tungusic branch, whom they resemble physically; moreover, devil-worship, so prevalent among the Tunguses, still survives in parts of the peninsula. The Japanese found the people crushed body and soul by a corrupt government and the country infested by brigands. A settled and enlightened

form of government has now been established; lives and property are secure, and the resources of the country are being rapidly developed.

Chosen can easily support at least twice its present popula-

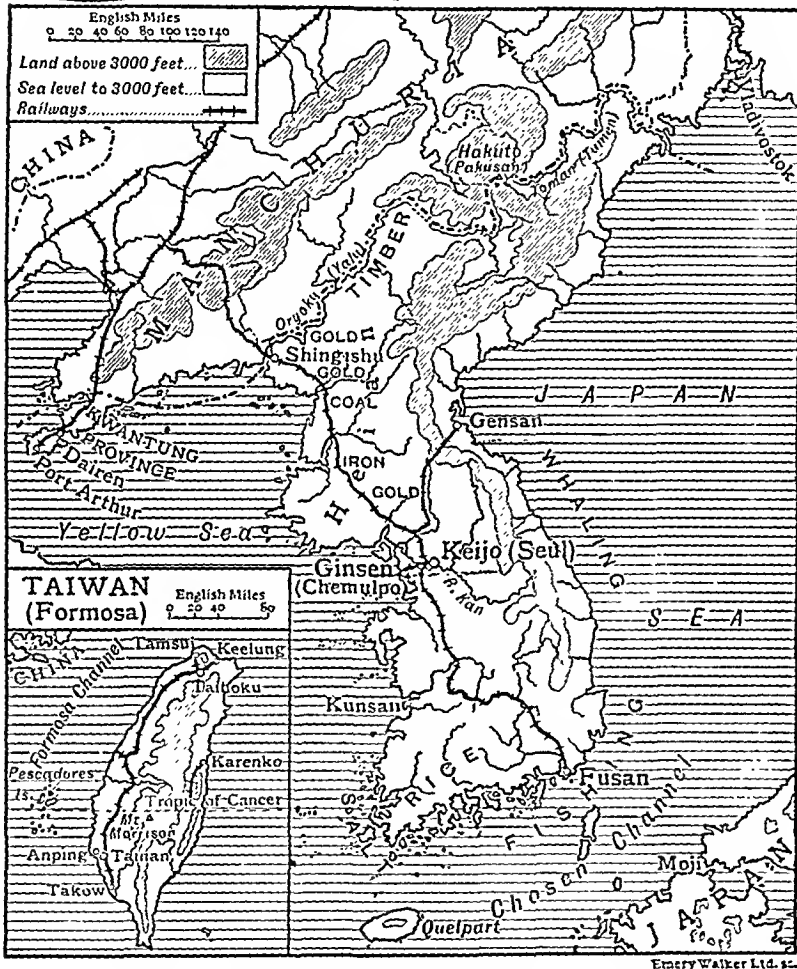


FIG. 99.—CHOSEN AND TAIWAN.

tion, and on this account is invaluable to the Japanese, whose population has outgrown the home resources. A railway now runs from Fusan through Keijo (Seul), the capital, to Mukden, whence it connects with the Trans-Siberian. Roads

are being built and shipping facilities increased by deepening harbours, embanking rivers, building lighthouses, etc. To stimulate industries, technical and industrial schools have been built, where instruction is given in silk-culture, cotton-growing, weaving, gardening, etc.

Productions and towns. Agriculture is the chief occupation and rice, the chief crop, is grown everywhere; much is exported to Japan, and cheaper varieties are imported from Indo-China. Eighty per cent. of the exported rice is grown in the extreme south-west. Both highland and lowland cotton is grown, and the export—chiefly to the Osaka mills—has increased four-fold since 1910 (five years). Ginseng, a medicinal plant much used in China, is a government monopoly. The dryness of the climate during the greater part of the year enables salt to be evaporated along the shallow S.W. shore.

Fishing now gives employment to a quarter of a million men, the chief "grounds" being the south and south-east coasts, where currents of cold and warm water meet. Whaling is carried on along the east coast, where also are obtained huge quantities of small fish used in Japan as manure. The hills in the north are rich in timber (oak and pine), and Shingishu at the mouth of the Oryoku has extensive saw-mills. Gold and anthracite are mined in the provinces of North and South Heian.

Keijo (Seul), the capital, stands on the navigable Kan; it is being transformed into a modern city. **Ginsen (Chemulpo)** on an open roadstead is the port. **Fusan**, at the terminus of the railway, shares with Ginsen the bulk of the shipping.

TAIWAN (FORMOSA).

Relief. The island of Taiwan is bisected by the Tropic of Cancer. A lofty central mountain range containing **Mt. Morrison** (13,000 ft.) and thirty other peaks over 10,000 ft. divides the island into east and west portions. The centre is covered with tropical and subtropical forests.

The east coast has no natural harbour, and communication by sea is possible for only six months in the year. Towards the north the cliffs present for over thirty miles a perpendicular face of over 5000 ft. The scenery of the whole coast is most impressive. On the other hand, the west coast is flat, and the shore waters and muddy river mouths are too shallow for shipping. Takow and Anping are the only harbours on this coast.

Products. Taiwan is an island of great natural beauty and, on that account, was named Formosa (= beautiful) by the Portuguese, who were the first Europeans to visit it. Since the island passed in 1896 into the hands of the Japanese many excellent reforms have been brought about. The island is now much more productive, and more attractive to Japanese emigrants. Two-thirds of the population are Chinese, who are settled along the western coastal plain.

The dense forests of the interior, containing, among other valuable trees, extensive groves of camphor laurels, were, until a year or two ago, in the hands of tribes of head-hunting savages. With great difficulty these people have been subdued and partially civilised; they display a certain blood relationship to the Japanese. Sugar cane has been introduced, and sugar is now a large export; there is also a large area under rice and tea. The camphor industry has been put on a proper footing, so that camphor is largely exported—chiefly to Japan. Two crops of rice are grown yearly, the surplus going to Japan. Gold, silver, copper, coal and petroleum are mined in the northern part of the island.

The island possesses over 300 miles of railway, and there are tracks for hand-pushed cars. The chief towns are Tainan (54), Taihoku and Kelung. The latter town, facing Japan and Shanghai, is the chief port.

EXERCISES.

1. The trade at the ports of Chosen is shown below :

(a) Account for the comparatively large import and export trade of Fusan.

- (b) What will the exports of Kunsan largely consist of ?
 (c) Why do the imports of Ginsen and Keijo so largely exceed the exports ? What will the imports be ?

	Imports (£100,000).	Exports (£100,000).	Total (£100,000).
Ginsen (Chemulpo)	15	5	20
Fusan - - -	17	12	29
Keijo (Seul) -	11	1	12
Kunsan - - -	3	6	9

- Account for the importance of Chosen to the Japanese.
- Name any reforms effected by the Japanese in Chosen, and show how they have benefited the country.
- Give a short account of Taiwan, pointing out in what ways the island is of value to Japan.
- Draw a map of Chosen. Indicate upon it the products, and show by dotted lines the routes by which they are exported.

LESSON XXXI.

MANCHURIA.

CLIMATE OF MANCHURIA AND CENTRAL CANADA.

		J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	
Newchwang (South)	T.	15	23	34	50	62	72	75	77	67	55	42	20	
	R.	—	—	—	—	1	2	6	5	3	1	1	—	19
N. Manchuria (Lat. 50°)	T.	-14	-3	14	35	50	64	71	66	53	34	10	-9	
	R.	—	—	—	—	1	5	4	2	3	1	1	1	19
Winnipeg (Canada) (Lat. 50°)	T.	-5	0	15	38	52	63	68	64	53	40	20	5	
	R.	1	1	1	2	2	3	3	3	2	2	1	1	22

- (a) Draw temperature curves, on same squared paper, for N. Manchuria and Winnipeg.

(b) How do they agree? During how many months is the temperature at each place below freezing point?

(c) Examine the rainfall statistics of all three places. In what respects do they agree?

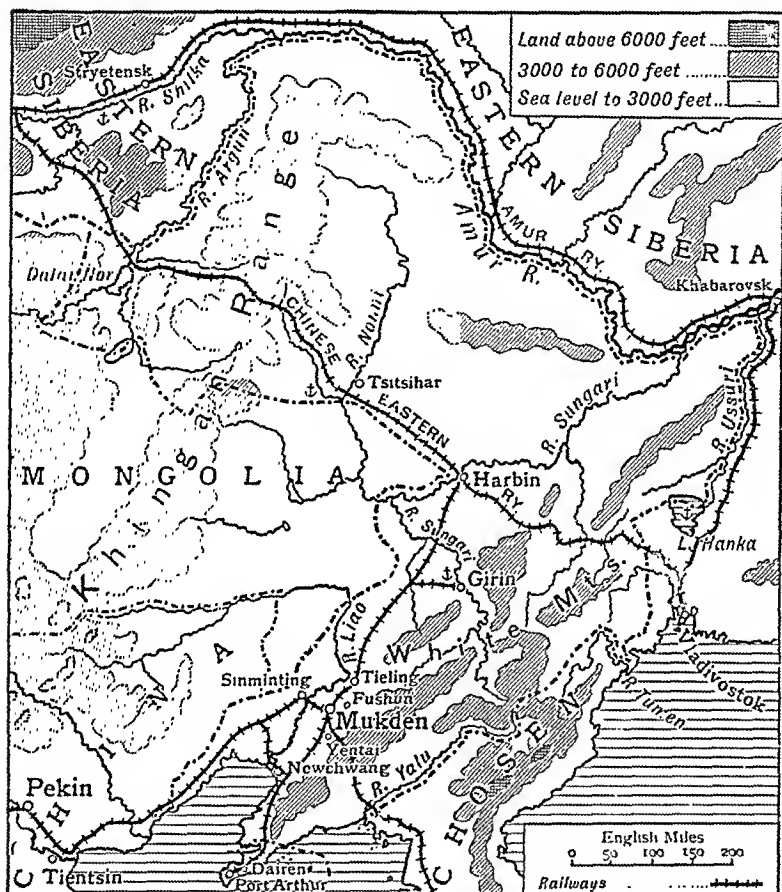


FIG. 100.—MANCHURIA.

(d) Wheat is the chief crop of the district south and west of Winnipeg. Would you expect wheat to thrive in Manchuria south of lat. 50° ? Give reasons for your answer.

(e) For how many months will Newchwang be frozen up? Note its latitude. Find a port in Europe with the same latitude: is it frozen up in winter? Explain the severity of the Manchurian winter.

2. Look up the population statistics of Manchuria on p. 175. Calculate the density of population.

3. The Sungari is navigable to Girin and the Nonni to Tsitsihar. How far are these towns from the open ocean?

Extent and climate. Manchuria is the smallest of the Chinese Dependencies. It consists of a broad northern plain, narrowing southwards, hemmed in on the east and west by high forest-clad hills. The Khingan range, forming the buttress of the Mongolian plateau, offers little protection from the biting north-west winds which blow out in the winter months from the frozen wastes of Siberia. On the other hand, the **White Mts.** (8000 ft.) obstruct the warm, damp, inflowing summer monsoon, thus depriving the plain of much valuable moisture.

The northern portion of Manchuria slopes towards the Amur river, and is drained by the **Sungari** and its tributary the **Nonni**. The southern portion, sloping southwards, is drained by the **Liao-ho**, and constitutes, at present, the most fertile and most populous part of Manchuria.

The summers are hot and sunny, with a five months' growing period free from frost; in winter the country is frost-bound, the rivers being closed by ice from early November to April. Even the Gulf of Pechili is fringed with ice during this period. The climate, therefore, closely resembles that of the wheat states of western Canada and the upper Mississippi.

Products. The soil is a rich black loam and of great fertility, especially in the south along the valley of the Liao and in the plains round Harbin. The chief crops are sorghum, millet, maize, wheat, hemp, sorghum, ginseng and soya beans. Sorghum is the staple food, the wheat being largely exported to the Amur district of Siberia, and Japan. Soya beans have many uses: when milled they produce a kind of flour, while the oil that can be extracted from them is used as an illuminant, as a lubricant, in lacquer work, and in the manufacture of margarine and soap. The residue, made into bean cake, is used in Japan as a fertiliser and for fattening pigs.

Cattle and horses are reared extensively in the plains north

MANCHURIA

of Harbin, where the grass grows to a great height. Timber is plentiful outside the plain.

The country abounds in mineral wealth. Both coal and iron are mined near Mukden, the former at Fushun and Yentai,

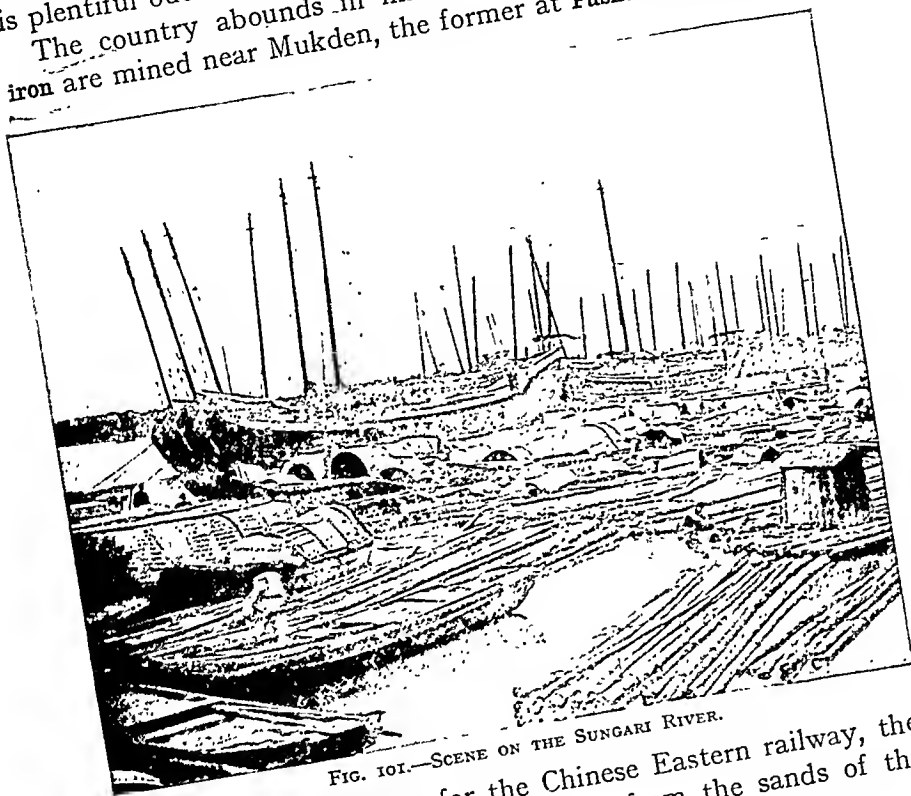


FIG. 101.—SCENE ON THE SUNGARI RIVER.

where it is convenient for the Chinese Eastern railway, the latter at Tieling. Gold is obtained from the sands of the Sungari river.

Communication. The country has excellent lines of communication both by rail and river. The Chinese Eastern Railway crosses the plain through Tsitsihar and Harbin, whence it branches to Vladivostok and Port Arthur. The Pekin-Tientsin line is connected up to the latter through Sinminting and Newchwang. With the exception of the Liao the rivers are all navigable by river steamers for great distances, the Amur to Stryetensk, the Sungari to Girin, the Nonni to Tsitsihar and the Ussuri to Lake Hanka.

Unfortunately these rivers drain northwards and are frozen over in winter. The Liao is navigable for a short distance in the flood season.

Towns. Manchuria has a great future. Chinese settlers are flocking into it from Chihli and Shantung, and large areas in the centre and north still await the plough and the spade. The south has long been densely peopled, and is the home of the Manchus who, in the seventeenth century, conquered China and overthrew the Ming dynasty. In the centre is Mukden, a spacious city with extensive flour mills. Girin and Harbin, in the centre of wheat- and bean-fields, are industrial and commercial towns. The former has extensive yards for building river boats, the latter mills flour. The chief port is Newchwang, at the mouth of the Liao; the old port of that name stands thirty miles up the river. It exports beans, ginseng, and tussore silk, and imports cottons, kerosene oil and sugar.

At the southern end of the Liaotung peninsula is Kwantung, a small territory leased by China to Japan in 1905 at the close of the Russo-Japanese war. It contains the ice-free port of Dairen, formerly called Dalny, with a fine harbour protected by a breakwater 1000 yards long. At the terminus of the railway is Port Arthur, a strongly-fortified town formerly held by Russia.

EXERCISES.

1. Say what you know about the river systems of Manchuria, pointing out their advantages and disadvantages.
2. In what various ways is the Kwantung territory of importance to the Japanese?
3. Chinese are flocking into S. Manchuria, whereas the immigrants into N. Manchuria are mainly Mongols and Russians. Comment on this so as to explain (a) why these people are migrating to Manchuria, and (b) why specially to the areas named.
4. In what ways does Manchuria resemble Canada?
5. Draw a production map of Manchuria. Insert on it the routes by which these products are exported. Name the rivers and ports.

PART III.

MID-ASIAN DESERTS AND STEPPES.

LESSON XXXII.

CENTRAL ASIA. TIBET.

1. Draw a section along the 90th meridian from the Tropic of Cancer to lat. 55° , using a horizontal scale twice that of Fig. 104 and a vertical scale 1 in. = 5000 ft. Mark the plateaux and depressions.

2. CLIMATIC STATISTICS.

	Altitude in feet.	TEMP. ($^{\circ}$ F).		MONTHS.				Rain- fall in inches.
		Jan.	July.	Below 32° .	From 32° - 50°	From 50° - 68°	Above 68° .	
Leh - -	11,500	19	64	3	4	5	—	1.5
Kashgar -	4,000	22	81	3	2	4	3	2
Turfan Oasis -	- 50	13	90	3	2	2	5	0.3
Maimachin -	2,550	- 16	66	5	4	3	—	5

(a) Find the annual range at each of the above places.

(b) On what sources of moisture will crops, if any, at these places depend?

(c) Why have Kashgar and Turfan a high July temperature?

(d) What kind of a climate would you say these four places have?

3. Make a list of rivers in Central Asia running into lakes, and of the lakes into which they run. What kind of water will the lakes contain, and why?

4. Estimate how far the following places are from the sea :

(a) Kashgar, (b) Kobdo, (c) Turfan.

CENTRAL ASIA.

Structure. The centre of Asia is a series of plateau lands comprising the three Chinese dependencies **Mongolia**, **Sinkiang** and **Tibet**, together with several outlying elevated spurs. Structurally they may be divided into :

(a) a lofty folded plateau of which the core is the Tibet plateau ;

(b) a series of lower plateaux to the north, ribbed by numerous ranges of block mountains, of which the Altai, Sayan, Khingan are the chief. These surround

(c) a comparatively low-lying basin, occupied almost entirely by the Gobi and Takla Makan deserts.

Climate and vegetation. The climate of this extensive area is continental, for the following reasons :

1. *Altitude* : hence radiation of heat is rapid in the thin, dry air.

2. *Distance from the sea* : the greater part is over 1000 miles from the ocean, and oceanic influences are scarcely felt.

3. *Height of bounding ranges* : inflowing rain-bearing winds are arrested and the interior is deprived of much moisture. As a result the *outward* sides of the mountain girdle are forested, while the gentle *inner* sides are clothed with grass which thins out towards the desert centre. Hence Mongolia and Sinkiang are steppe-encircled deserts, while Tibet, through altitude, is almost entirely cold desert. The mountain rim makes this an area of **inland drainage** (Fig. 103), with intermittent streams and brackish or salt lakes.

4. *Strong winds* : due to the absence of trees. Dust storms in summer cover up vegetation, causing higher temperatures, while in winter the temperature is lowered by the winds.

History and people. The Chinese dependencies which occupy these Mid-Asian plateaux are of little world importance. Their very worthlessness for settled occupation constitutes in Chinese eyes their chief value, as they afford, by their extent and barrenness, a strong defence against invasion. The steppes are inhabited by nomadic shepherds,

and were the homes at various times of many barbaric tribes—Huns, Magyars, Mongols, etc., who frequently raided the surrounding settled areas in China, India and Central Europe.

The desert region of Sinkiang contained at one time a much denser population, for the ruins of several sand-buried cities have recently been unearthed near Keria and Lob Nor (Fig. 104). Desert conditions were partly brought about by cutting down forests, for there is evidence of former forests—notably east of Lob Nor. It is probable, however, that the climate was gradually growing more arid before that time.

TIBET.

Extent. Tibet is named, by the Tibetans, Bodgul (land of Bod), and, by the Chinese, Sitsang (West Government). On its northern and southern edges it is hemmed-in by the lofty snow-clad Kuen-Lun and Himalaya ranges respectively, across which passage is possible by difficult routes during a short period of the year. There is one route to Kashmir through the Karakorams on the west. The upper valleys of the Salwen, Mekong, Yang-tse and Hwang-ho are too deep to be crossed, and too narrow to allow traffic along them; in consequence there are only two roads—both very difficult—across the eastern frontier, one leading to Yunnan and the other to Szechuan.

Tibet thus stands as a huge land mass, 15,000 feet in altitude, completely isolated on all sides, and this fact, coupled with the jealousy of the inhabitants, the extreme climate, and the unsuitability of the country for settlement, has caused little to be known about it. Gold, from the plateau, has long been obtained in China from the sands in the bed of the Yang-tse, but unless that mineral is found on the plateau in large quantity, it is probable that Tibet will remain for many years the most solitary region in the world.

Tibet can be divided into two natural regions: a table-land region and the southern valleys.

The Table-land region. This division, called Chang-Tang, occupies the north and west, and is traversed by numerous

ranges of which the Kuen Lun, Altyn Tagh and Tsaidam are the chief. Between are broad open plains draining to countless sedgy salt lakes; they are covered in summer with the thinnest of verdure and in winter by frozen snow. Except for the nomads who ascend from Sinkiang to escape the summer heat, this region is practically uninhabited. The



FIG. 102.—PACK-SHEEP IN TIBET. Photo Sven Hedin.

only town is Rudok, on the route from Leh (in Ladak) to Lhasa.

The Southern valleys. This division is a country of high mountains and deep river valleys. In the latter is gathered the settled population, for the climate is moderately warm and agriculture is possible. Wheat, barley and even rice are grown in the more favoured valleys, of which the chief is that of the Tsang-po. Fruits, such as grapes, apricots,

pomegranates, are also produced. From the edges of the lakes are obtained borax and salt, while many of the valleys are tree-clad. The chief exports are wool, furs, musk; the imports are foods, such as rice, tea, grain, and cotton and silk goods.

People and religion. The Tibetans belong to the Mongolian race. Their religion is Lamaism, a form of Buddhism prevalent only in Tibet and Mongolia. Like all Buddhists the Tibetans believe in the transmigration of souls, but they also hold the peculiar belief that Buddha is reincarnated in certain disciples, of whom the chief is the Dalai-Lama at Lhasa. Each lamasery, or monastery, has at least one of these living Buddhas; many have several, and to them homage and tribute are paid as to Buddha himself. Thus the lamaseries have become very wealthy, while the lay population has remained correspondingly poor.

The country abounds in lamaseries, in which over one-third of the total male population live a celibate life as lamas or monks. Many lamas are also bankers and business men.

Towns. The capital Lhasa (20), on a tributary of the Tsang-po, is the natural centre of routes and the meeting place of pilgrims bound on the twofold mission of religion and commerce (cf. Mecca). On a triangular hill outside the city stands the Potala, a magnificent palace over 300 feet in height, in which live the Dalai Lama and over 10,000 other lamas. Its dome, covered with plates of gold, is an impressive landmark. The market-place of Lhasa is crowded in summer. Yaks and even sheep are used as pack animals by the Tibetans—the former being sometimes called the reindeer-of-Tibet.

Shigatse and Gyantse are other trading towns.

Influence of the Tibet plateau. Although in itself of little value for human habitation, the plateau is nevertheless the indirect source of life to millions of human beings. In the first place it enormously strengthens the summer monsoons (p. 55): in the second place it is a storehouse of moisture and rock waste which in summer find their way by river to

the lowlands of S.E. Asia, and fertilise thousands of acres of densely populated flood plain (Fig. 103).

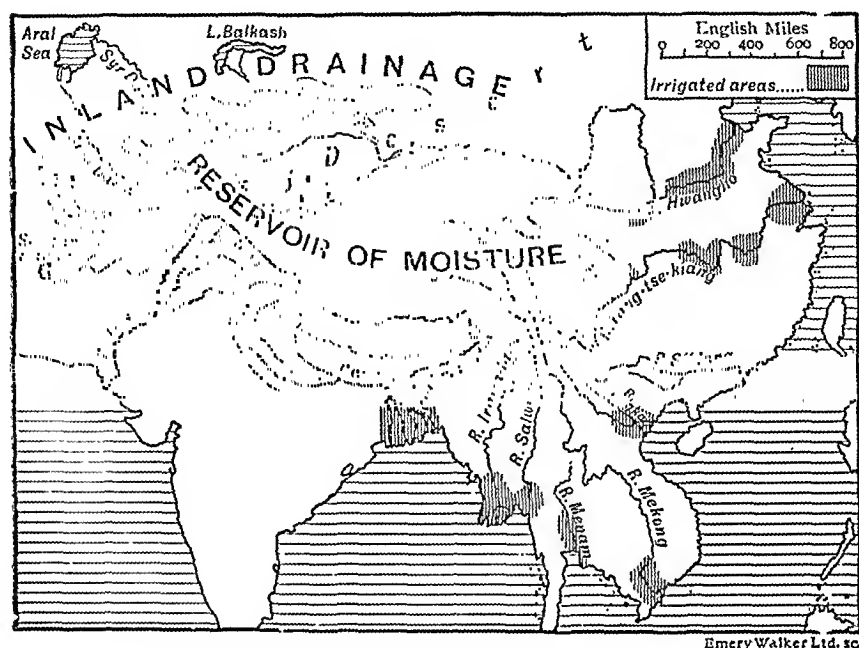


FIG. 103.—The central shaded area contains glaciers which melt in summer, causing the rivers to run full and in some cases to overflow. Hence irrigation at that season is possible along their lower courses. (Note key.)

EXERCISES.

1. What is a continental climate? Account for its characteristics.
2. What kind of laws would you expect to prevail among pastoral nomads, and why?
3. Why is Tibet so thinly populated?
4. Write a short account of the inhabitants of Tibet.
5. Write notes on: (a) Lhasa, (b) Tsang-po.
6. Trace a map of Asia. Note the scale. Draw a dotted line to enclose an area 1000 miles and upwards from the sea. Shade in the areas above 6000 feet.
7. On outline maps of Europe and Asia draw thick lines to represent the ranges radiating from the Alps and Pamirs respectively. Point out any similarity you notice.

LESSON XXXIII.

SINKIANG AND MONGOLIA.

1. Estimate the area of the Takla Makan desert. Compare it with that of the British Isles (by means of rectangles of $\frac{1}{2}$ in. base).
2. The light mail from Kiakhta to Kalgan (Fig. 106) takes eight days in summer. Calculate the distance covered per day.
3. English cottons from China are exchanged at Kobdo (Fig. 106) for local wool and hides. Estimate the total distance the cottons have travelled.
4. Calculate the relative areas of Inner and Outer Mongolia.

SINKIANG.

Divisions. The province is known variously as Chinese Turkestan, Kashgaria and Sinkiang, the last name (=new frontier) being officially applied to it in 1878. The area is really an immense desert; the **Tian Shan**, lofty and glacier-covered, divides it into two unequal portions, (a) the Tarim Basin or Eastern Turkestan, and (b) Dzungaria. Within the ranges of the Tian Shan is the elevated valley of the river Ili opening westwards.

Tarim Basin. This region, 3000 to 4000 feet in altitude, is hemmed in on three sides by broad, lofty land masses, across which trade is carried on by extremely difficult passes (Fig. 104). The eastern frontier, though less mountainous, is difficult of access through the presence of desert.

The mountain rim deprives the country of direct rainfall, and the rivers are fed entirely by glacier water. At the foot of the horse-shoe mountain rim the rivers reach their maximum volume, giving rise at that stage to a ring of oases; beyond, in the desert, they die away. Four rivers—Turfan, Kashgar, Yarkand and Khotan, all perennial streams—unite to form

the Tarim (1200 m.); unlike most rivers the Tarim is widest (400 ft.) and deepest (20 ft.) in its middle course. Its end is in Karakoshun lake near Lob Nor. The latter is a shallow brackish lake in the centre of a vast salt swamp; near it are the sand-buried ruins of several ancient towns as well as the remains of ancient forests. Karakoshun contains fresh water.

Within the ring of oases extends the Takla Makan desert, a

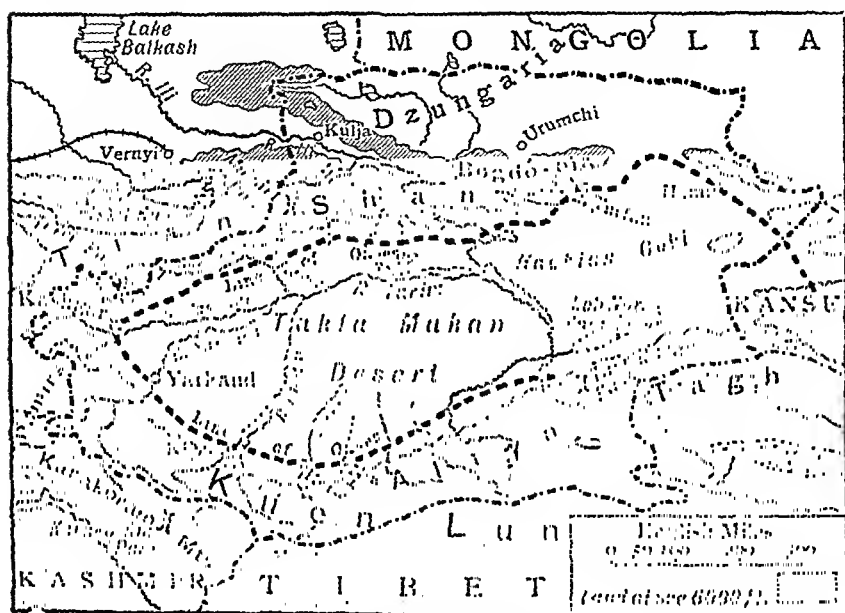


FIG. 104.—SINKIANG.

wide expanse of clay hollows and shifting sand dunes (barkhans). There are no permanent tracks across it.

As vegetation exists only at the oases, the population is settled and consists of a variety of races whose ancestors used the oases as passage ways to and from China. It was from these oases that the Chinese made their way into China, taking with them their inherited capacity for irrigation farming, and their dislike of pastoral pursuits. The inhabitants are Mohammedans.

Towns and communications. The oases are connected by a famous road—the Tian Shan Nanlu, which, starting from Kansu, crosses the Gobi desert at its narrowest

SINKIANG

point along a line of deep wells, and makes a complete circuit of the oases. On it stands Kashgar, a bazaar town, surrounded by fruit trees; there are two towns—an old and a new—five miles apart. Yarkand, similarly situated at the centre of routes, is older and more important; its chief industry is the leather trade, although carpets, silk and cottons are also manufactured. The town possesses several



FIG. 105.—ON THE SAND DUNES OF THE TAKLA MAKAN DESERT.
Note wind ripples. The dunes are all shifting westwards.

fine palaces and mosques. The road from Yarkand to Kansu, now little traversed, abounds in ruined sand-buried towns—notably at Keria, Nia and Lob Nor. The last-named (City of Lop) was visited by Marco Polo, the Venetian traveller, on his journey to China in the thirteenth century.

Dzungaria. This area lies between the Tian Shan and Altai systems; in the west the land rises to the Tarbagatai mountains, while in the east it lies open to Mongolia. There

are rich pasture lands on the Tian Shan foothills; the rest of the country is a stony, barren waste studded with brackish lakes. The famous north road, the **Tian Shan Pehlu**, leaves the south road at the Turfan oasis and connects up Urumchi with Kulja. The **Turfan** oasis lies 50 feet below sea-level, and was once a lake bottom; there are many loess-covered villages scattered about, now deserted.

Urumchi, the capital of Sinkiang, trades in skins and furs.

Ili Basin. This upland valley, opening westward, has difficult communication with Dzungaria by the north road; and with the Tarim basin by the Muzart Pass. Timber and grass are abundant, while near Kulja there are extensive deposits of coal.

MONGOLIA.

Extent and build. This is the most extensive of the Chinese dependencies, having an area little short of that of

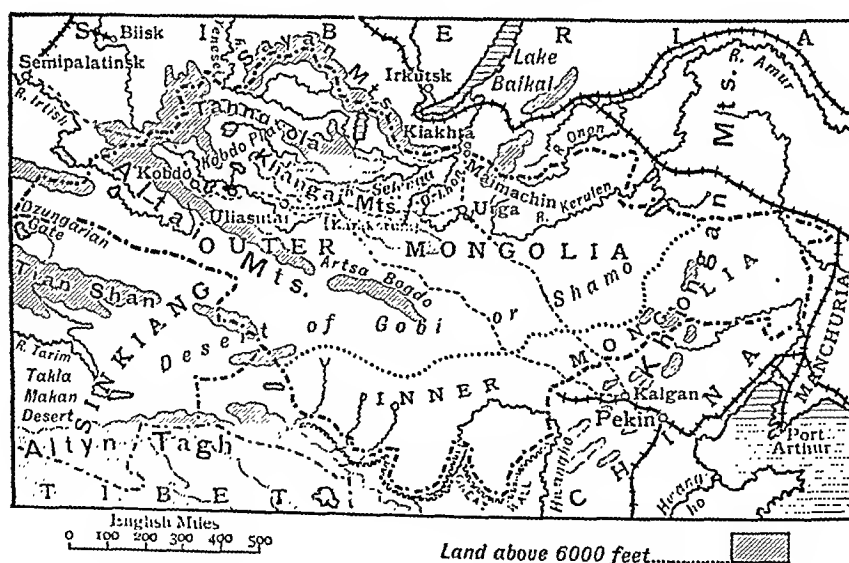


FIG. 106.—MONGOLIA.

China Proper. By the Mongols it is called **Gobi**, meaning "desert," and by the Chinese **Shamo**, meaning "sandy waste." The Chinese also apply to it the name **Han-hai** ("rainless sea"),

a name more strictly applicable to the whole of the great desert area extending from the Khingan mountains westward to Kashgar. Adopting this view, the Takla Makan desert would be the western and the Gobi the eastern portion of the rainless sea, the two desert basins being separated by a belt of high ground stretching from Kansu to the eastern spurs of the Tian Shan. It is across this belt that the road from Kansu runs to Dzungaria and Russian Turkestan. This



FIG. 107.—CAMEL CARAVAN TRAVERSING THE MOUNTAINOUS NORTHERN FRONTIER OF CHINA ON THEIR WAY TO MONGOLIA.

great rainless sea, having the length, and roughly the configuration, of the Mediterranean, was actually at one time a huge inland sea.

In build, Mongolia is a lofty basin occupied by the Gobi desert and surrounded on all sides by elevated steppe areas.

Gobi desert. The desert has an altitude of from 2500 ft. to 3000 ft.; unlike the Takla Makan it is not entirely desert. In early summer a thin, straggling herbage appears, and at this season nomads drive their flocks inwards from the fringes, their black tents, or yourts, forming the only land-

marks in the level monotonous expanse. Violent dust-storms sweep over the desert at all seasons of the year. A caravan road from Kalgan (Nankou Pass) crosses the desert to Urga and thence to Maimachin near the Siberian frontier town Kiakhta. Thousands of two-humped camels laden with brick tea, silks and cottons would be met in a journey along this route from Siberia to China. It is estimated that over a million camels are employed in the caravan trade of Mongolia.

North-West Highlands. North and west of the Gobi desert Mongolia consists of high plateaux. The loftiest region is the Kobdo plateau, a mountain-ribbed area very difficult of access. In the valleys of the Sayan, Altai, Artsa Bogdo and Khangai ranges grass grows abundantly and affords pasturage for large flocks of cattle and fine-woolled sheep. The cattle are sold in the autumn at Biisk and other Siberian towns—payment being made chiefly in bar silver. On their return, the shepherds purchase such goods as cottons, tea and small hardware brought by Chinese merchants. Kobdo and Uliasutai, the only towns, stand on caravan routes from Kalgan and Urga to Russian Turkestan; they are marts for wool, horse-hair, hides and skins.

On the eastern slope of the Khangai mountains formerly stood Karakorum, the capital of the Mongols. Genghiz Khan ruled there in the thirteenth century. The ruins of the city and its irrigation works still exist.

Along the rest of the Siberian frontier, from the Kobdo plateau eastward to the Khingan range, extends a broad upland belt 200 miles wide and from 3000 to 6000 feet in altitude. In the sheltered valleys of the Orkhon, Kerulen and Onon are found a few settled inhabitants, chiefly Chinese, but the population is for the most part nomadic. This region is the true home of the Mongols, and it is on these extensive grassy steppes that they are found in greatest number. There are numerous rivers, and water can also be obtained over wide areas by digging wells. Camels, horses, and sheep are extensively reared.

The religion of the Mongols is Lamaism, over half of the

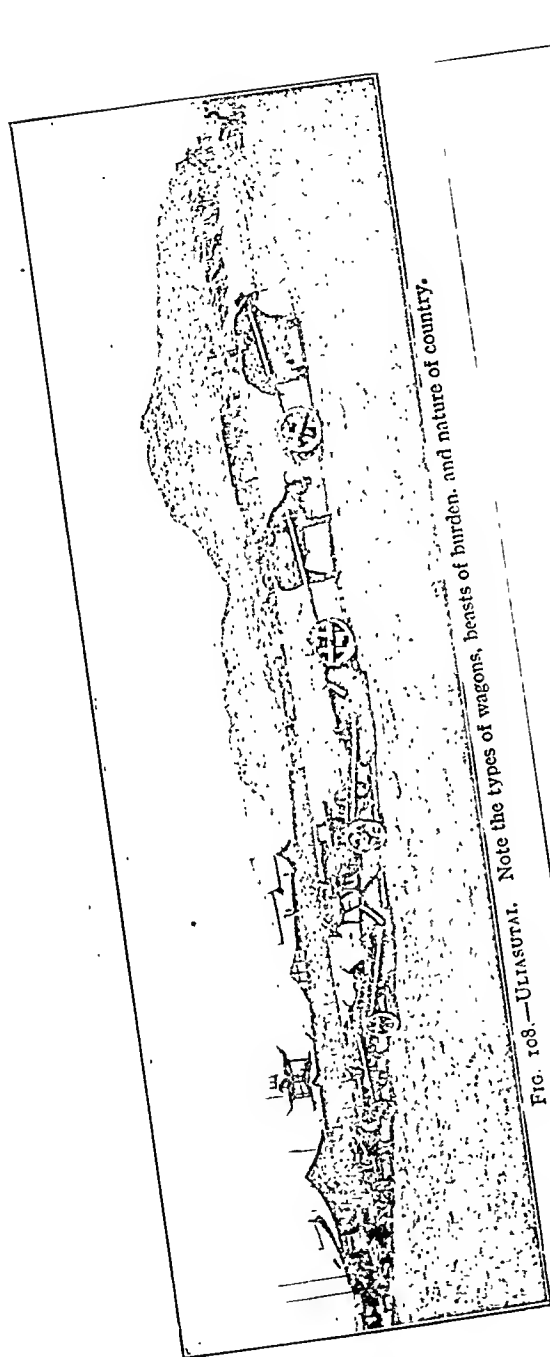


FIG. 108.—ULIASUTAI. Note the types of wagons, beasts of burden, and nature of country.

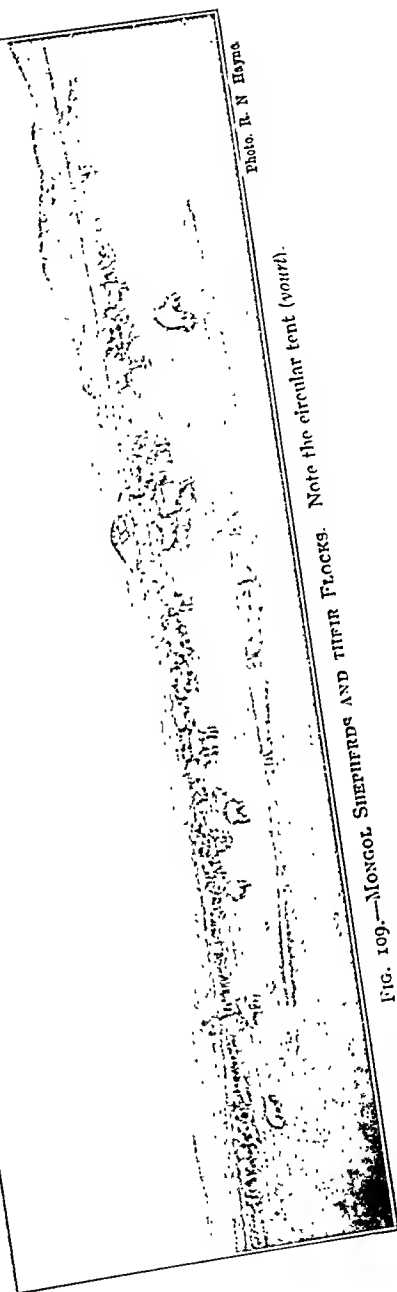


Photo. R. N. Haynes

FIG. 109.—MONGOL SHEPHERDS AND THEIR FLOCKS. Note the circular tent (yurt).

total male population being lamas. The religious centre is **Urga**, a ramshackle town of mean wooden houses. Many Mongols winter in the towns in tents surrounded by wooden palisades, within which are herded their flocks. Urga is a commercial city where tea, cottons and chinaware are

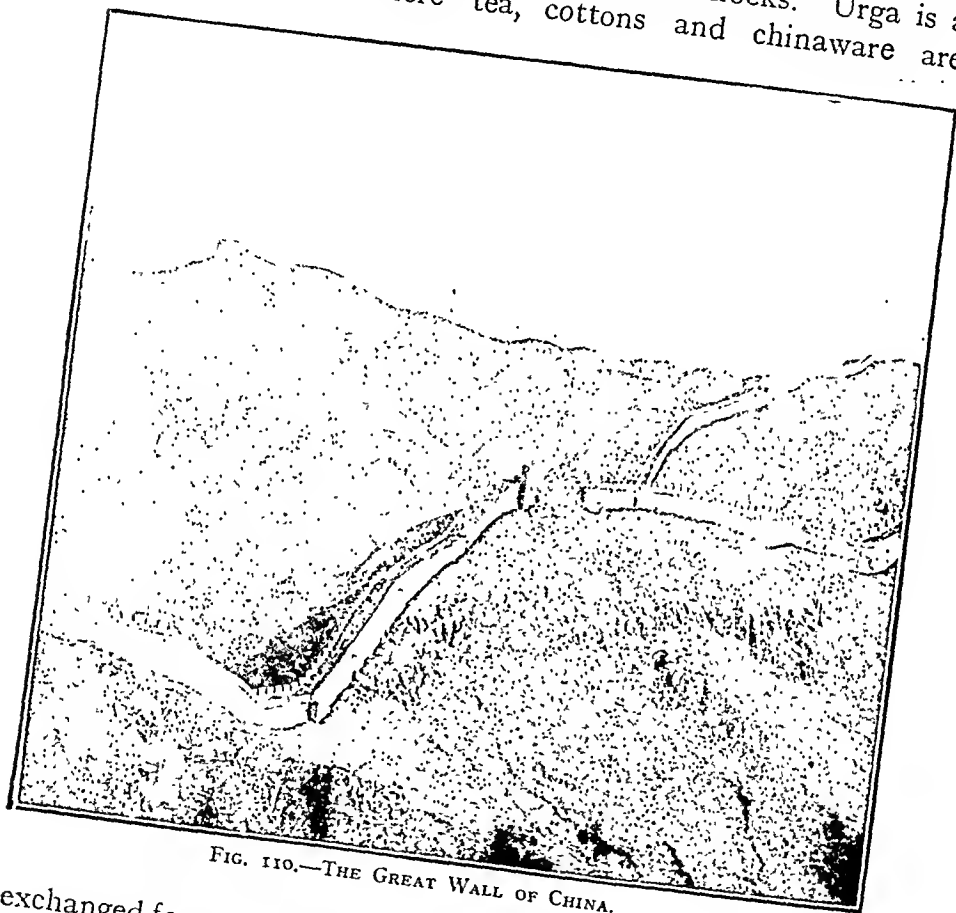


FIG. 110.—THE GREAT WALL OF CHINA.

exchanged for such Russian products as furs, leather and gold. Camels, horses and sheep are also bartered.

In 1911 **Outer Mongolia** (Fig. 106) revolted from Chinese rule. The chief lama was created emperor and Urga the capital. China and Russia have agreed neither to invade nor colonise this area which, although nominally under Chinese suzerainty, is in every respect self-governing.

Inner Mongolia. This part of Mongolia comprises the

upland strip lying between the Gobi and China Proper. Long ranges of mountains shut it off from the latter country. Of these the chief are the Khingan, consisting of many parallel ranges enclosing loess-filled valleys. The Chinese settlers have made these valleys extremely productive, and, as immigration steadily continues, Inner Mongolia promises soon to become a province of China proper. In the south there are extensive wind-swept areas covered in spring with high grass, and upon this country, too, the Chinese are fast encroaching. By planting trees close together they break the force of the wind and keep the seed corn from being blown out of the ground.

A feature of the frontier mountains is the Great Wall, built in the third century B.C. as a defence against the Huns. Beginning at the Chihli Gulf, this rampart climbs the Khingan ranges, where it sends off several branches, crosses the Ordos plateau and terminates in the mountains of Kansu. Its height varies from about 20 to 30 feet, and a broad road, 12 feet wide, passes along the top (Fig. 110). The wall was made of earth faced with brick or yellow earth; in many parts the yellow earth has crumbled away, and the wall is merely a heap of ruins.

EXERCISES.

1. Describe the climate and vegetation of Outer Mongolia.
2. Write notes on (a) Urga, (b) Great Wall, (c) Dzungarian Gate.
3. Indicate the nature of the trade passing along the Mongolian trade routes.
4. Write notes on (a) Tarim river, (b) Lob Nor, (c) Takla Makan.
5. How do the inhabitants of Sinkiang earn their living?
6. What evidences are there that Sinkiang was once more densely populated? Why is it not so densely populated now?
7. Draw a sketch map of Mongolia, and mark on it (a) Gobi desert, (b) Trade routes, (c) Trading towns.
8. Draw a sketch map of Sinkiang and Mongolia, marking on it (a) uplands, (b) routes, (c) chief towns.

LESSON XXXIV.

RUSSIAN TURKESTAN.

1. Examine Fig. III. Estimate the time taken by a train travelling on an average twenty miles an hour to go from Krasnovodsk to Uralsk (near upper margin).

2. Calculate by squared paper the area of the Aral Sea. Compare it with the Irish Sea.

3. Caravans travel from Peshawar to Bokhara. Detail the route taken and calculate the distance.

4. The monthly climatic figures for Khiva are as follows :

	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.
T.	30	30	45	62	73	80	84	83	70	60	50	40
R.	I	I	I	I	—	—	—	—	—	—	—	—

(a) Estimate whether Khiva is or is not suited to grow cotton, the requirements being (i) plenty of sunshine, (ii) seven months above a mean temperature of 60° without frosts, (iii) slight rainfall.

(b) What would the daily range have to be that there should be frost at Khiva in April?

Extent and structure. Russian Turkestan, or Turan, lying east of the Caspian Sea and Ural River, prolongs the conditions of the Han-hai or "rainless sea." The greater part of this region formed in quite recent geological time the floor of a huge inland sea which ran northwards to the Arctic Ocean over the present Ob basin, and westwards across the Caspian to the Black Sea.

The climate is continental, cold winters being followed by hot summers. Scarcely any rain falls on the plains, the rivers being fed solely by glacier water from the mountains on the east and south-east. The area can be divided into (a) alternating desert and steppes, and (b) a number of oasis-rimmed triangular valleys, of which Bokhara and Ferghana are the chief.

Steppes and deserts. North of the Aral Sea is a region of dry steppes and saline wastes containing numerous salt lakes and intermittent streams. The inhabitants of this pastoral region are Kazaks (Russian Kossacks) called, by the Russians, Kirghiz; hence this region is named the Kirghiz steppes. Living in tents the Kirghiz shepherds wander about

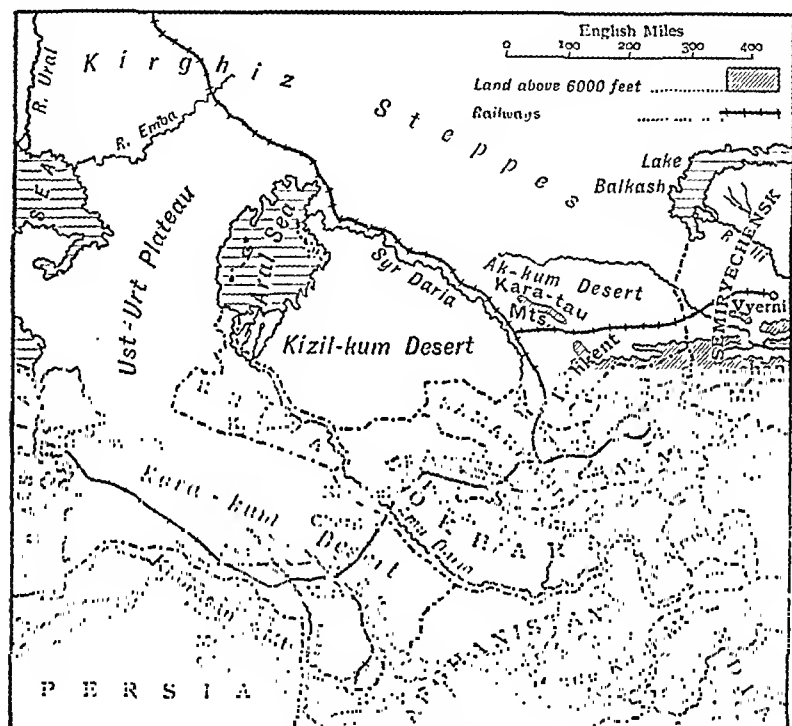


FIG. III.—RUSSIAN TURKESTAN.

following the grass from the south in spring to the north in autumn, while in winter they drive their vast flocks of sheep, cattle, horses and camels to the Tian-shan, to the sheltered, sunny valleys above the snow-line. The only mineral product is petroleum, obtained in the Emba valley.

South, west and east of the Aral Sea extend vast deserts: Kara-kum ("black sands"), Kizil-kum ("red sands"), and Ak-kum ("white sands"). The vegetation throughout this

sandy desolate region is confined to a few prickly plants and shrubs. Strong winds blowing steadily from the north heap up the sand into shifting ridges and dunes; the "tebbad" or "fever wind" blowing in summer is specially dreaded. The sands have buried many cities in the past, and threaten soon to overwhelm others lying on marginal oases.

The few towns of this region lie along the perennial streams, but two only—Khiva and Merv—lie in mid-desert. **Khiva**, the capital of the Russian vassal state of that name, depends on canals taking out of the Amu, and stands at the head of a large oasis extending to the Amu delta. River steamers ply thence to Chargui on the railway. **Merv** stands on the terminal oasis of the Murghab in the centre of flourishing cotton fields. **Askabad** is a rapidly expanding oasis of vineyards and cotton fields.

Transcaspian railway. Running from oasis to oasis, this railway traverses the outskirts of the desert area from Krasnovodsk to Orenberg. It was built by the Russians as a strategic line to enable them to hold their advanced outposts on the border of Persia and Afghanistan. A feature of each train is the number of cistern cars carrying oil and water. In the desert stretches, the railway line is protected here and there from the drifting sand by hedges of saxaul bushes.

The railway has proved a great commercial success. Of cotton alone the amount conveyed annually from Turkestan to Russia has increased from under 10,000 tons (camel transport) to 250,000 tons, and is steadily growing. The facility with which, as in India, food and fodder can now be conveyed across the desert to all the oases, whenever shortage of water threatens famine, has led to a steady expansion of irrigation areas and a corresponding increase in the settled population. In the past these fertile but isolated mountain-girt regions suffered mainly, and almost solely, from want of a commercial highway. Eastward and southward difficult passes led to countries possessing the same products; hence the markets lay westward across the desert. Russian and European goods, such as iron-ware, cottons, woollens, are

now taken eastward and exchanged for cotton, silk, wool, dried fruits, etc., produced locally or brought across the passes from China, Afghanistan, Persia and even India. Thus Bokhara, Samarkand, Tashkent and Merv are reviving their ancient bazaar trade.

Bokhara. This mountain-girt area is, like Khiva, a vassal state. The Amu Daria, glacier-fed, is the chief river, but the Zarafshan, running in a broad and immensely fertile valley, is of much greater value. Cotton, of medium and



FIG. 112.—KHIRGIZ CAMP.

dried fruits of the highest quality, are produced on the oases. Excellent cavalry horses and sheep are reared on the rich upland grass-lands, and hides and wool (*astrakhan*) are largely exported, the latter from the district round Karakul (*caracai*). Silk is produced in the lower Pamir valleys.

Bokhara (75) the capital, with over 300 mosques, lies at the end of the Zarafshan. It is an ancient city famous for leather and cloth industries (*buckram*). Its water supply is now threatened by the growth of the Samarkand oasis upstream.

Ferghana and Samarkand. This area resembles Bokhara in its situation, products and natural features. Long lines of oases follow the base of the border ranges which drain into the Syr Daria. This river is the counterpart of the Amu, and enters the Aral Sea through a delta abounding in wild boars, wolves, deer and mosquitoes.

The products are cotton, fruits, horses, hides, wool and silk. The Transcaspian railway traverses the valley to Andijan, whence the Terek Pass leads to Kashgaria. The capital and chief town is **Tashkent** (155), the present seat of the Russian Government of Turkestan.

Samarkand (60) was the capital of the famous conqueror Timur, and a great intellectual centre in the Middle Ages, as the ruins of many colleges and mosques still testify. The new Russian quarter of spacious tree-lined streets contrasts strongly with the old town.

Semiryechensk. This region lies east of Lake Balkash, and includes many small fertile valleys of which the largest and most important is that of the Ili. The upper part of this valley, containing the bazaar town of Kulja, belongs to the Chinese dependency Sinkiang, to which it has access by the **Muzart Pass**. Many Russian peasants have migrated to this region in recent years, and it is the winter camping ground of the Kirghiz nomads. **Vyerni**, the capital, is the present terminus of a branch railway to be extended to Semipalatinsk.

Rich and extensive deposits of coal have recently been found in the Ili valley near Kulja.

EXERCISES.

1. Give an account of the Transcaspian railway, pointing out (a) the difficulties with which the engineers had to contend, (b) why the track follows the present route.
2. Give an account of the mode of life of the Kirghiz shepherds, stating to what extent it is influenced by climatic conditions.
3. Estimate the value to Russia of Russian Turkestan.

4. Point out as fully as you can how the Trans-Caspian railway has helped to develop the trade of Russian Turkestan.

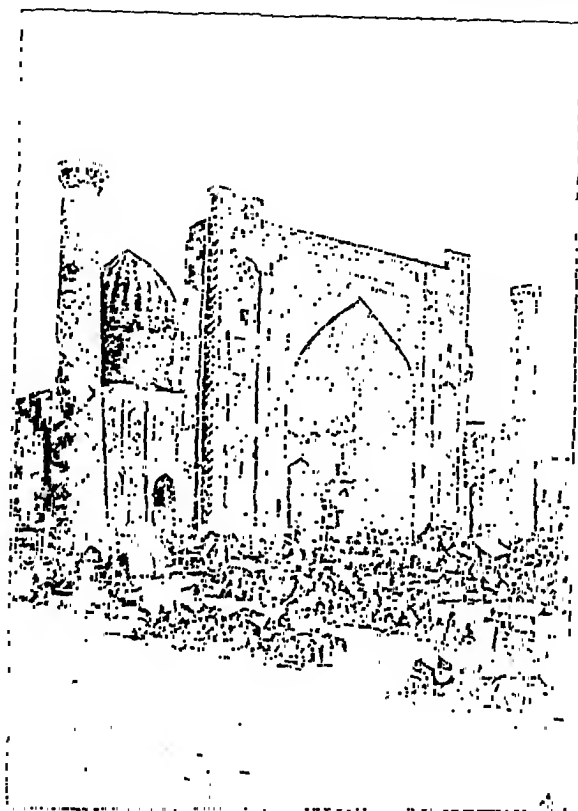


FIG. 113.—GREAT MOSQUE, SAMARKAND.

COTTON STATISTICS.

Province.	1000 acres.
Ferghana - - -	677
Syr Daria - - -	188
Transcaspian - - -	123
Samarkand - - -	79
Khiva - - -	107

5. Name an Irish county having the same area as the total area under cotton in the above provinces.

6. Draw a sketch map of Russian Turkestan, and mark on it areas producing (*a*) cotton, (*b*) petroleum, (*c*) cattle, (*d*) wool.

7. Draw a sketch map of the southern and south-eastern frontier of Russian Turkestan, inserting (*a*) passes, (*b*) names of adjoining countries, (*c*) towns connected by the passes.

8. On a large sketch map of Asia, shade the areas of inland drainage. Insert also the rivers draining these areas, and also show by thick, black lines the mountain ranges in which these rivers rise.

9. On a large sketch map of Asia, shade in and name the deserts. Draw the parallels within which they lie.

10. On a large outline map of Asia, mark the great trade routes (*a*) by land, (*b*) by sea.

PART IV.

NORTHERN ASIA.

LESSON XXXV.

SIBERIA : EXTENT AND COMMUNICATIONS.

CROP STATISTICS (million quarters).

	Wheat.	Barley.	Oats.	Rye.	Maize.
European Russia - -	105	66	113	113	8
Siberia and the Steppes -	17	2	14	4	—
United States - -	91	21	136	4	107
Canada - - - -	26	5	43	3	2

1. (a) Draw rectangles of $\frac{1}{2}$ -inch base to compare the total output of grain in the above areas.

(b) Similarly compare the output of wheat.

(c) Look up wheat statistics for India (p. 86). Is Siberia the granary of Asia (allow 3 quarters to the acre)?

RUSSIAN EMPIRE : AREA AND POPULATION.

	Area (sq. miles).	Population.
Siberia - - -	4,832,000	9,578,000
Russia in Asia - -	6,294,000	27,237,000
Russia in Europe -	1,997,000	140,683,000
Russian Empire - -	8,765,000	171,060,000

2. (a) Draw two squares of one inch side, and in them place dots to represent the density of population per sq. mile in Siberia and European Russia respectively.

(b) Draw three rectangles of one inch base to represent proportionately the areas of the Russian Empire, Siberia, Europe ($3\frac{1}{2}$ million sq. miles).

3. (a) Estimate the lengths of the navigable stretches of the Ob, Yenisei, Lena and Amur (to the anchor in Fig. 114).

(b) Calculate the length of the waterway from Lake Baikal to Archangel when the canals indicated are constructed (Fig. 114).

4. Find the distance across Siberia along parallel 60° (use thread). Hence calculate the distance in miles between the meridians in latitude 60° . What fraction is it of the distance at the equator?

CLIMATES OF SIBERIA.

		J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Year.
Omsk	T.	0	2	15	35	55	65	70	70	53	38	20	8	—
	R.	—	—	—	—	1	2	2	2	1	1	—	—	9
Yakutsk	T.	-45	-35	-11	15	40	58	66	60	42	16	-21	-41	—
	R.	—	—	—	—	—	—	—	—	—	—	—	—	—
Okhotsk	T.	-12	-8	10	21	35	50	55	58	45	23	6	-8	—
	R.	—	—	—	—	1	2	2	2	2	1	1	1	12

5. (a) Draw temperature curves for each of the above places, using the same graph paper.

(b) At which of these places does most snow fall?

(c) Compare these curves with that for Bombay (p. 58).

6. Two express trains per week run from Moscow to Vladivostok, the journey taking $8\frac{1}{2}$ days. Calculate the average speed.

Extent and relief. Siberia embraces practically the whole of Asia north of the 50th parallel, and thus occupies a position similar to that of Canada. It is divided by the 90th meridian into a lowland western area drained by the Ob and Yenisei, and a mountainous eastern area drained by the Yenisei, Lena, and Amur. The southern boundary follows first the Ob water-parting and then the Altai and Sayan systems; these ranges, rich in gold and silver, include—

many broad, fertile valleys. Beyond Lake Baikal the boundary skirts the southern end of the Yablonovoi mountains, and follows thence the Argun, Amur and Ussuri rivers.

Climate. Siberia has the most continental climate on the face of the earth, due to :

- (a) *High latitude* (50° - 75°) N. ; hence the sun's altitude is low even in summer, while in winter the sun fails to shine at all for several days at places within the Arctic Circle ($66\frac{1}{2}^{\circ}$ N.).
- (b) *Altitude*, in the south and east. .
- (c) *Northward slope of the land* : thus the number of solar rays striking any area is diminished.
- (d) *Situation* on the eastern side of the continent of Eurasia ; thus warm, west winds off the ocean have lost their warmth.

The winters last from October to May, mean minimum January temperatures of -40° F. being common in eastern Siberia ; at Verkhoyansk, lying in a " frost hole " just within the Arctic Circle, a minimum temperature of -90° F. has been recorded. Snowfall is slight except in the south, where it comes sufficiently early to protect autumn wheat. Terrible blizzards (buran) blow, chiefly in the northerly regions ; to guard against them the natives dig underground dwellings. Except for a thin surface layer (3 or 4 ins. to 3 or 4 ft., depending on the latitude), the ground is permanently frozen, and on that account great difficulties were experienced in the construction of the Trans-Siberian railway—especially on the plateaux east of Lake Baikal.

In summer the sun shines weakly within the Arctic Circle for days at a time without setting, and the temperatures reached on the drier areas is sufficient for certain plants, such as mosses and lichens, to fructify. Barley will ripen in two months after seeding time in the neighbourhood of Yakutsk, while in the extreme south wheat will ripen in three months—so powerful are the sun's rays in the dry clear air. As radiation of heat from the earth is rapid under these conditions night frosts in August put a stop to wheat

growth, although the mean daily temperature for that month in the latitude of London is 65° F. (July temperature at London = 64° F.)

History. Siberia may be termed the Canada of Asia, for the two areas have much in common. Lying between the same parallels they have practically the same climate and products, and, up to a point, have passed through similar

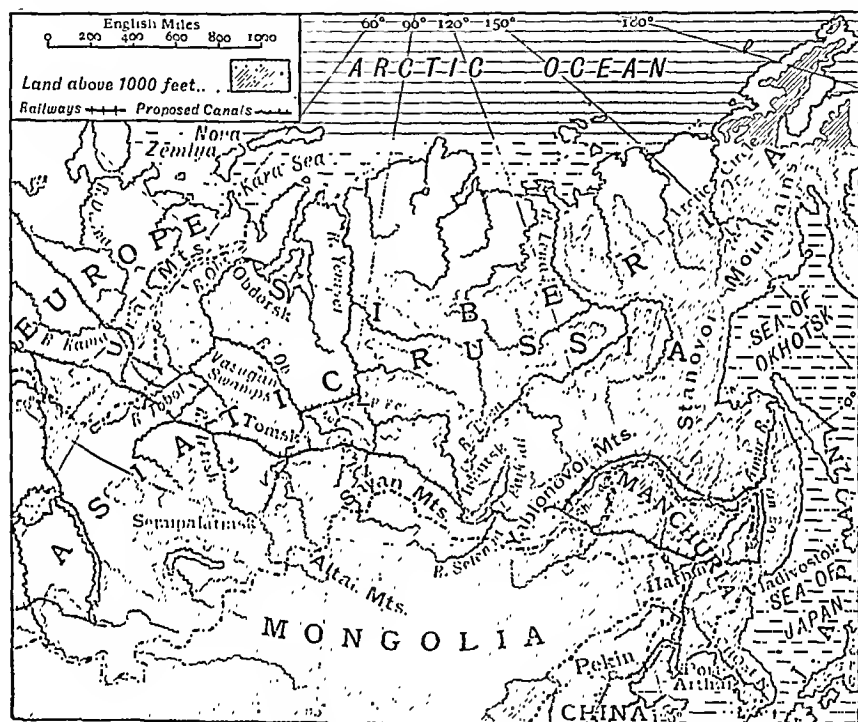


FIG. 114.—SIBERIA : PHYSICAL.

phases of development. Compared with Canada Siberia is quite a young country, for it is only in recent years that any systematic attempt has been made to organise and develop its resources.

For ages the only inhabitants were bands of Finnish trappers who ranged the forests by the river banks, and Tartar nomads in the south-western steppes; these may be said to correspond to the Eskimos and Indians of Canada. Then the Russians spread eastward over the Urals, overcame a Tartar kingdom

centred round the river Tobol, and succeeded by the eighteenth century in planting their flag along the present southern boundary of Siberia. Beyond, however, sending out criminals and political offenders to work in certain gold mines, or to pass a long term of years among its frozen wastes, Russia displayed little interest in Siberia for many years. It was only when fear for the safety of the eastern seaboard

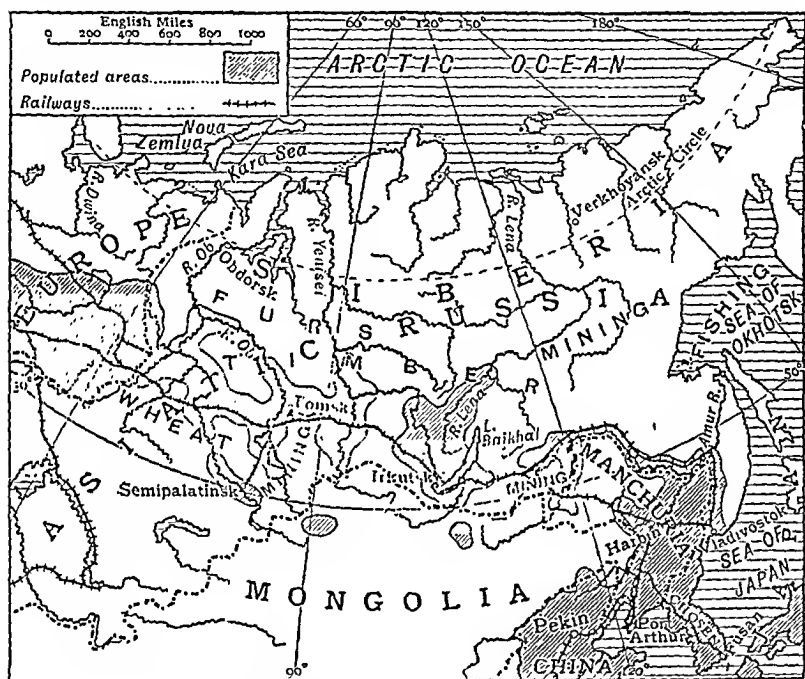


FIG. 115.—POPULATED AREAS IN RELATION TO COMMUNICATIONS AND PRODUCTS.

compelled them to build a railway from end to end that the first real step was taken in the development of the country.

The great coloniser of western Canada was the Canadian Pacific Railway, backed up by a magnificent system of inland waterways leading towards Europe. Whether the Trans-Siberian railway and the splendid river system will do as much for the wheat lands of Siberia is doubtful, as the market lies beyond European Russia, which is a competitor in the same products.

The Russian Government has recently done a great deal to encourage colonization; settlers receive forty-five acres of free land, they may borrow money free of interest, purchase agricultural machinery at cost price, and are given sufficient seed wheat for their first year. Over 200,000 immigrants cross the Urals yearly; some go to the wheat lands, others to the mines.

Siberia, as the statistics at the head of this chapter show, is still far from being the granary of Asia. It has been calculated that on the Black Earth belt alone enough wheat can be grown to feed the whole of Europe; while the forests are still practically untouched. The land has therefore great possibilities.

Communications. **Roads.** Winter is the travelling season, for at that period all labour, except lumbering, is impossible, and the frozen snow affords a hard level surface for sleighs. In such a climate roads are of little use, being under snow in winter and a quagmire in spring. There are certain recognised routes between centres of population, and along these at intervals have been built rest houses, where food and lodging may be obtained at fixed prices. One of these routes—the *Trakt*—runs from Perm to Kiakhta, and is used by tea caravans.

Waterways. The *Ob*, *Yenisei* and *Lena* are navigable by river steamers as far as the frontier uplands, while the *Selenga*, one of the head-streams of the *Yenisei*, is navigable far into Mongolia. Together with their tributaries they present a waterway which for length and volume is unsurpassed. They suffer, however, from several drawbacks: (a) Like the north-flowing Canadian rivers (*Mackenzie*, *Nelson*, etc.) they empty into a frozen ocean, in this case ice-free for about two months. (b) They are frozen over for six months in the year and for nine months at their mouths. (c) As each rises in the south the break-up of the ice begins there and the liberated water, supplemented by that from melting snow, reaches the middle course before the ice there has thawed; huge floods ensue, the water spreading far and

wide, unable to sink through the frozen ground. The watershed between the Ob and Yenisei is so low that their flood waters unite, and for a time water runs into one river or the other according to the direction of the wind.

The Ob and Yenisei are navigable for five months from their mouths to Biisk and Minusinsk respectively, but the Kara Sea, into which they flow, is ice-free for only two months. In order to create a commercial highway to the open ocean, it is proposed to establish ports at which goods can be stored on Nova Zemlya and at the mouths of the rivers. A fast flotilla would transfer the goods across the Kara Sea during the short ice-free season. Another project is a railway from Obdorsk (mouth of Ob) to Barents Sea (Fig. 116).

The Amur, flowing eastward, compares unfavourably with the St. Lawrence (p. 275).

As the tributaries of the three main rivers run east and west, it has been proposed, by cutting suitable canals, to construct a gigantic waterway from the White Sea to Lake Baikal. The projected canals are shown in Fig. 114. For floating timber this waterway would be of considerable use as it traverses the forest zone, but it lies too far north to benefit farmers. At present the chief use of the Siberian rivers is as feeders to the Trans-Siberian railway.

Trans-Siberian Railway. This railway runs from Moscow to Vladivostok, and was built to secure Russia's position in the Far East, where Vladivostok had been established as an outpost some thirty years previously (1861). In consequence, the route was chosen with a view to speed and ease of working, with the result that many rich and important areas were passed by. The railway traverses the fertile black-earth steppes from Chelyabinsk to Omsk (Fig. 116). Thence it follows the southern boundary of the Vasyugan Swamps, leaving the fertile Baraba steppe and the rich Altai mining districts far to the south. Crossing the Ob south of Tomsk the railway enters the Taiga or upland forest belt, and, after bridging the Yenisei at Krasnoyarsk, runs straight to Irkutsk through a mining and forest country. Tunnelling the hills

to the south of Lake Baikal, the railway enters the difficult mining country of Transbaikalia. Thence crossing the Yablonovoi range through tortuous river valleys the railway crosses the Shilka and Argun rivers, and descends the Khingan range to the Manchurian plain. From Harbin, a branch, now in the hands of the Japanese, runs to Port Arthur and Fusan; the main railway continuing to Vladivostok. The Amur railway joins at Chita (Fig. 119).

At first the railway was a single track, but long stretches have now been made double. The engines are built for wood fuel, but the opening up of coal-mines south of Tomsk will provide a less bulky form of motive power.

EXERCISES.

1. Estimate the value of the Siberian waterways.
2. Compare Siberia and Canada as regards (a) climate, (b) waterways and communications, (c) products, (d) world situation.
3. Mention any large government schemes that would help to develop the resources of Siberia. Give an example in each case.
4. Draw a sketch map of Siberia, and insert on it (a) railways, (b) eight chief towns. Thicken the navigable part of the rivers along which produce is conveyed to the railways. Mark three mining areas.

LESSON XXXVI.

WESTERN SIBERIA.

1. Plot a curve to show the growth of the butter export from W. Siberia in the years 1901-12.
2. The export of butter in 1912 was valued at £6,800,000. Estimate (1) number of tons exported; (2) value of the butter per lb.; (3) export in tons per day (average).
3. There are 4886 creameries in W. Siberia. What was roughly the average export from each to countries other than E. Russia?

EXPORT OF BUTTER FROM WESTERN SIBERIA IN THE YEARS
1901-1912 (excluding supplies to E. Russia).

1000 pouds = 16.1 tons.

TABLE I

(1000 pouds).			(1000 pouds).		
1901	-	1202	1907	-	3414
1902	-	1610	1908	-	3310
1903	-	1746	1909	-	3354
1904	-	2003	1910	-	3917
1905	-	2039	1911	-	4363
1906	-	2974	1912	-	4460
(1913 : Barnaul, 42 per cent. ; Omsk, 29 per cent.)					

OTHER EXPORTS.

Export.		1000 tons.	Destination.
Meat	-	42	E. Russia.
Fish	-	28	Perm and Ural mining districts.
Wool	-	10	E. Russia.
Bacon	-	3	Britain <i>via</i> Windau.
Eggs	-	3	

4. Draw rectangles of $\frac{1}{2}$ in. base to express the quantities in the above table ; include a rectangle for the butter export of 1912.

The Tundra. This region extends as far south as lat. 62°-66°. Its southern margin is really marked out by the 50° F. July isotherm, which indicates the northern limit of trees. The subsoil is perpetually frozen, but the surface soil thaws in summer to a depth of some three inches. Trees and vegetation requiring more than that depth of soil cannot exist. The vegetation is almost confined to lichens, mosses and other water-loving plants which flourish in the swampy ground ; only on well-drained slopes with a south aspect is a fuller flora, including grass, to be found. Berry-bearing bushes such as the cranberry and wortleberry, and dwarf birches grow in sheltered hollows.

The natives are mostly **Samoyedes** and **Tunguses**, showing strong Mongolian features. In summer the men fish, while the women smoke the catches, collect berries, separate out



Emery Walker Ltd. sc

FIG. 116.—WESTERN SIBERIA. (After Price.)

The Taiga or Forest Belt lies between the Tundra and the Black Earth Belt.

train oil, and drive the reindeer from pasture to pasture so as to fatten them before the snows begin. Their dwelling is a tent of reindeer skins, easily erected and carried about,

which in winter is sometimes replaced by a wooden hut or even one of mud. At the approach of the cold season a move is made southward to the forests, where shelter can be obtained and fur-bearing animals caught. The furs and oil are bartered for tobacco, sugar, tea, brandy, ammunition, fire-arms, etc., brought downstream by Russian traders. At this season, also, the tundra-dwellers must often shift their quarters as their flocks of reindeer move away in search of food. In addition to being their beast of burden, the reindeer supplies food and clothing; while its power to scent out and uncover reindeer moss hidden deeply under the snow enables it to live through the winter when any other domestic animal would die.

Forests. The Tundra gradually merges into a belt of coniferous forest which extends southward so far as the 54th parallel (Fig. 116). In western Siberia alone the forest belt covers an area equal to half that of European Russia. At present little lumbering is done, although Siberian pine, being soft, is much sought after for pattern-making; there is a magnificent waterway for floating the rafts.

The interior of this huge coniferous forest stretch is little known except along the banks of the numerous rivers; much of it is frozen swamp in winter and inundated in summer. A thick undergrowth of berry-bearing shrubs supplies much of the food upon which the bird and animal life primarily depends.

Fur-bearing animals, such as the sable, ermine, fox, marmot and marten, are found in great numbers, and their furs constitute, at present, the chief wealth of this region. **Turukhansk**, on the Yenisei, and **Tobolsk** are the chief collecting centres, and **Irbis**, **Tiumen** and **Tobolsk** the chief marts. The trappers are mostly Finns.

Black-Earth Steppe (lat. 57°-55° N.). Lying south of the forest belt and at an elevation of from 100 to 500 feet, this steppe region is free from river floods in early summer. It is to this region that Russian immigrants are yearly flocking, for it possesses all the essentials for successful

wheat culture except proximity of market. The soil is a black peaty loam of great richness; the summer climate is hot and bright, with early rains; and the Trans-Siberian railway traverses the region from end to end. Here and there are park-like stretches, while the Baraba steppe resembles closely the wheat lands of Canada throughout its undulating treeless expanse.

In the portion west of the Irtysh the densest population is settled round **Kurgan**. This district exports not only wheat but butter, eggs and bacon, the butter going largely to Denmark. The business is in the hands of exporting firms who buy from the peasants and creameries and pay in kind, *e.g.* butter-making implements, scythes, tools, etc. Communal creameries have been established with the aid of Government money, and refrigerating chambers have been set up along the railway.

Omsk (129), the capital of Western Siberia standing where the railway crosses the Irtysh, is a rapidly growing town. The Irtysh, here half a mile broad, is thronged in summer with steamers and other vessels bringing wheat and dairy produce from the Semipalatinsk and intervening districts to the railway for export.

The Baraba Steppe. This region is at present colonised along its eastern border only. Here the soil is particularly fertile, and, as the Altai and Sayansk mountains are rich in gold, silver and coal, this is destined one day to be a densely populated region. **Barnaul** (61), the chief town, stands on the branch railway to Semipalatinsk (with projected extension to Tashkent).

Dry Steppe. This treeless, grassy region includes all the gradually rising area south of the Black-Earth region as far as the Ob water-parting in lat. 50° N., where it merges gradually into the drier and more arid Kirghiz steppes. The inhabitants are **nomadic Tartars**, possessing large flocks of cattle, horses and sheep. Wool, hides and cattle are largely exported from Omsk, and there is also a considerable export of meat.

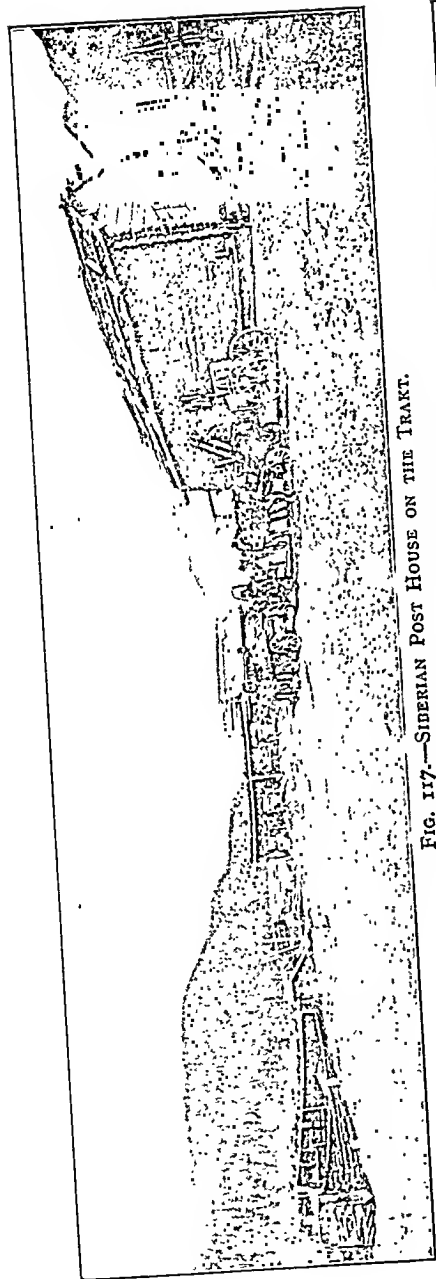


FIG. 117.—SIBERIAN POST HOUSE ON THE TRAKT.

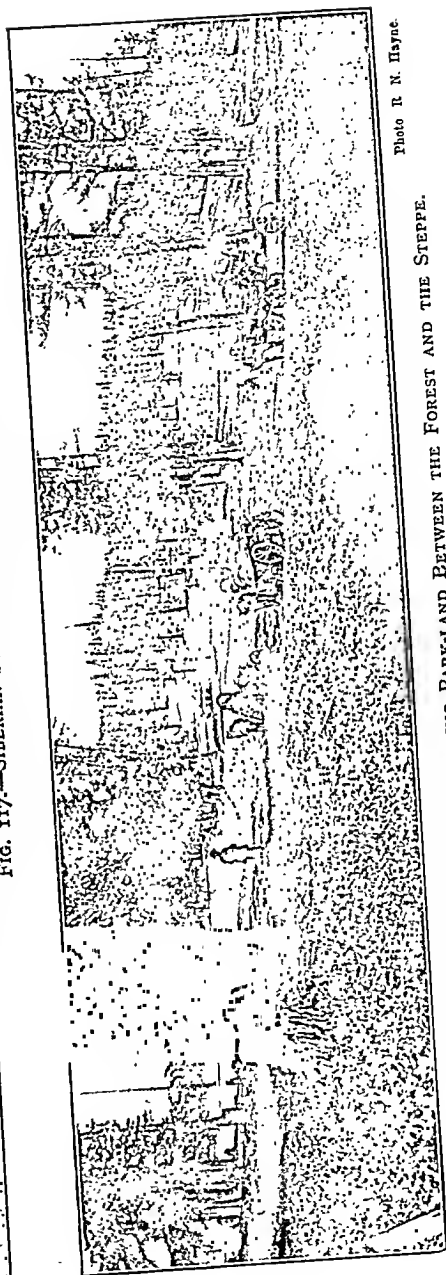


Photo R. N. Haynes

FIG. 118.—VIEW IN SIBERIA SHOWING PARK-LAND BETWEEN THE FOREST AND THE STEPPE.

Akmolinsk, at the centre, is on the track of a projected railway to **Semipalatinsk**.

Altai and Sayansk Uplands. Although producing furs and other forest products, the chief wealth of this region lies in its deposits of precious and useful minerals. Gold is dredged from the beds of the Ob and Yenisei and their tributaries, the chief centres being **Seminogorsk**, **Biisk**, **Kuznetsk** and **Yeniseisk**. Silver and copper are mined near **Semipalatinsk**; while from **Tomsk** southwards to **Kuznetsk** extends one of the largest coalfields in the world, now being developed to supply the railway.

Above **Krasnoyarsk**, the Yenisei flows through the comparatively low **Abakansk steppe**, centring round **Minusinsk**, to which the sunny climate and fertile black earth soil are yearly attracting thousands of settlers. Only the absence of railways prevents the development of this lofty mountain region, for coal and food are plentiful, and the products, being valuable metals, can bear the cost of a long railway journey. **Krasnoyarsk** (80), at the outlet of the **Abakansk steppe**, is rapidly growing for the same reason as **Omsk**, and should surpass **Tomsk** (112) at the head of a small branch line. The latter town, with flour mills and distilleries, is the seat of a university.

EXERCISES.

1. Write a short account of the **Baraba steppe**.
2. Describe the soil, situation and products of the **Black Earth region of Siberia**.
3. To what extent does climate affect the lives of the **Tundra dwellers**?
4. Name the chief products and activities of western **Siberia**.
5. There are butter factories at **Kurgan**, **Omsk**, **Kainsk**, **Tomsk**, **Barnaul**, **Semipalatinsk**. Draw a sketch map inserting these places. Name, in general terms, their situation in Fig. 116.

LESSON XXXVII.

EASTERN SIBERIA.

1. Find by squared paper the area of Kamchatka. Estimate its distance from Vladivostok.

2. In 1913 the output of tinned salmon from Kamchatka was 3000 tons, the fishermen being Japanese. How far had the fishermen to travel (double journey)?

3. Find the length of Lake Baikal.

Will it be a freshwater or salt lake? Give reasons.

4. Draw diagrams to show the mid-day sun altitude at a place on the Arctic circle (*a*) on June 21, (*b*) on December 21.

5. Show by a diagram the apparent path of the sun in the heavens, on June 21, at a place on the Arctic Circle.

TRADE OF THE PACIFIC PORTS.

Imports.	£1000.	Exports.	Remarks.
Iron, tin and manufactures - - -	395	Sawn timber (chiefly fir and larch for match-wood).	2.5 million cu. ft. from Vladivostok and Imperial Harbour equally.
Machinery - - -	178		
Agricultural machinery	120		
Cattle - - -	131		
Rice - - -	123		
Tea - - -	107		

6. What do these imports and exports tell you about the country? What will the machinery be?

7. Over 200,000 tons of wheat enter E. Siberia annually. Where is it imported from? By what routes?

8. The shores of S.E. Kamchatka are frost bound for six months in the year, while the shores of Britain in the same latitude never freeze. Account for these facts.

Vegetation Zones. The area between the Yenisei and Lena has an average elevation of 1000 feet, east of the latter river it is much greater. The extensive plateaux east of

Lake Baikal and bordering the Yablonovoi and Stanovoi ranges have an elevation of from 3000 ft.-6000 ft. All the ranges and plateaux run in a S.W.-N.E. direction and are crust blocks having steep escarpments facing the Pacific and gentle slopes to the interior. Kamchatka and the new and old coastlines have the same direction, and are other lines of crust weakness.

The increased altitude, coupled with the proximity of the Pacific, gives E. Siberia two vegetation zones only, viz. Tundra and Coniferous Forests; the Steppe zone is missing.

The Tundra, extending southward to the Arctic Circle, is inhabited by Yakuts and Chukchis, who show scant respect to Russian authority. The products of the region include ivory, obtained chiefly in the New Siberia islands, off the mouth of the Lena, where well-preserved bodies of the mammoth, a prehistoric animal resembling a huge elephant, are found embedded in the frozen ground. American traders compete with the Russians for the ivory output.

The forests produce furs; west of the Lena the furs travel by river to the Yenisei, Yeniseisk being the market; east of the Lena they travel to the river itself—Yakutsk being the chief collecting station and Irkutsk the mart. Lumbering is an infant industry in the Amur basin.

Yenisei Basin. West of the Lena the land is drained by the right bank tributaries of the Yenisei, of which the chief is the Angara, flowing out of Lake Baikal. On it is Irkutsk (108), a well-built city, with many educational and other institutions. Its position on the railway, at the focus of traffic along the three rivers and overland from China, gives it permanent importance. It is thronged by wealthy miners in the winter season. Lake Baikal (360 m. by 30 m.), the Dalai Nor or Holy Lake of the Mongolians, is the largest freshwater lake in Asia. It occupies a rift valley with mountainous walls; there are hot springs along the eastern shore.

Lena Basin. The settled inhabitants of the Lena basin live in clearings and glades along the banks and are not very

numerous. River steamers ply on the river from near its source to the Arctic during the summer. Gold is dredged from the beds of the Vitim, Olekma and Aldan rivers, the output from the Vitimsk district being one-quarter of the total for the Empire.

From Yakutsk (8), a small mean town, to its delta, the



FIG. 119. - EASTERN SIBERIA.

Lena has a breadth of from two to four miles, which is increased in the flood season to over fifty miles through long stretches. Its northerly direction makes it of little use for lumbering.

Amur Basin. The Amur is navigable for vessels drawing 16 feet as far as Khabarovsk, at the junction of the Ussuri, where the river, 500 miles from its mouth, is $1\frac{1}{2}$ miles wide;

and by smaller river steamers to Nerchinsk on the Shilka. Many of the tributaries, notably the Zeya, Sungari and Ussuri, are also navigable. Navigation is impossible during the four winter months, while the upward bend of the river near its mouth confines the shipping season at Nikolaievsk to five months, which is extended to seven months by employing ice-breakers. Hence, river traffic turns up the Ussuri river to Lake Hanka, whence goods reach Vladivostok, 100 miles away, by the Ussuri railway (Fig. 119). The latter railway has now been carried across the Amur, and thence westward through Nerchinsk to the Trans-Siberian railway near Chita, keeping away from the river to avoid the marshes. It is possible now to travel by rail from Moscow to Vladivostok entirely on Russian soil.

Immigration into the Amur basin is steadily proceeding. Lumbering gives employment to many hands, and timber is exported from Vladivostok to Japan (for match-splints) and Australia. The river abounds in fish, and a large canning industry has been developed; over 30,000 tons of "Amur salmon" and caviare being railed yearly to Europe.

Minerals are found in great abundance. Gold is mined round Chita and Nerchinsk, in the upper Zeya, and in the Amgun valley near Nikolaievsk. All gold ore has to be sold to the Government, who have smelting laboratories at Blagoveschensk, Nikolaievsk, Krasnoyarsk and Bodaibinsk. Blagoveschensk (70) is a modern, well-built town near the junction of the Amur and Zeya; it smelts gold, and mills Manchurian wheat. Coal is mined near Vladivostok and in Sakhalin.

The Amur basin offers an excellent field for the immigrant. At present mining is attracting chiefly Chinese labour, but the other industries are largely in the hands of Russians. Wheat is at hand on the plains of Manchuria.

Pacific Coast. The whole coast line from Bering Strait to the Okhotsk Sea abounds in fish of the highest quality. Fishing rights are put up annually for auction, and the season lasts from May to October (five months). The rivers of

Kamchatka teem with salmon, while piles of fish are left along the shores after a storm. At the break-up of the ice, herrings move southwards towards Sakhalin in such dense shoals that it is said to be possible to dig them out of the water with a spade. The industry is handicapped by its remoteness from Vladivostok and by the shortness of the fishing season.

Vladivostok (91), on a beautiful bay, is the port of the Amur basin and destined to become the finest city in Siberia. It is a modern city, laid out on spacious lines. **Imperial Harbour** shares with Vladivostok in the timber export trade.

Sakhalin. This island, separated by the difficult Tartar Strait, was for many years a penal settlement. The climate is severe, and the chief value of the island lies in its deposits of coal and heavy oil. The southern portion belongs to Japan.

EXERCISES.

1. Account for the importance of Irkutsk and Blagoveschensk.
2. Contrast the Lena and Amur in as many ways as you can.
3. Compare Vladivostok with Vancouver. Illustrate by sketch maps.
4. Write notes on Lake Baikal, Kamchatka, Sakhalin.
5. Compare the Amur with the St. Lawrence. What American town corresponds to Vladivostok in the comparison of the two rivers?
6. Show, by a sketch map, the traffic routes leading to Irkutsk.

GLOSSARY.

- Brick tea** : consists of powdered tea or tea dust, steamed, and compressed into small cubes. The Chinese export it into Tibet where it is used as money.
- Buffer State** : a State separating two countries which are bound by treaty not to invade it. It thus acts as a buffer between them.
- Catch crops** : crops interplanted between slow-maturing crops like rubber and coconuts, and rooted up when the latter reach maturity. Tapioca, coffee, and pepper are catch crops during the early years of growth of rubber and coconuts.
- Coir** : the fibrous material on the outer husk of the coconut. It is made into mats, ropes, etc.
- Conifers** : trees having cones for fruit, *e.g.* firs, pines, etc. Their small needle-like leaves are adapted to windy or dry (frozen) climates, for they check transpiration. Conifers are found where the winters are severe and the summers short, *e.g.* Siberia.
- Crust blocks** : elevated areas, surrounded by areas of subsidence due to faulting (see *faults*).
- Drowned coast** : a sea-coast that has gradually sunk so that the sea has invaded the river valleys forming gradually shallowing bays and estuaries (*rias*). Islands have been formed wherever depressions allowed the water to spread from valley to valley.
- Entrepôt** : a port to which goods are taken to be sold and then reshipped. It is really a market. Examples : London, Singapore, Hongkong, Aden.
- Fault** : a crack in the earth's crust along which the rocks have been displaced in a vertical direction.
- Ferrel's law** : "all moving bodies on the surface of the earth twist to the right in the northern hemisphere and to the left in the southern hemisphere." Thus in the northern hemisphere rivers hug and undercut their right bank, the Trade Winds change in direction from N. to N.E., the Westerlies from S. to S.W.
- Fold mountains** : ranges consisting of strata pushed into folds due to pressure at right angles to the direction of the

range. The action can be illustrated by pressing a sheet of paper from opposite sides, when it will buckle up in the centre. Examples : Pennines, Pontus, Zagros.

Ghats : an Indian word meaning *stairs*. The mountains of India overlooking the Arabian Sea rise step by step, and are called the W. Ghats.

Ginseng : a drug produced in Chosen and S. Manchuria. It fetches high prices in China where it is highly prized.

Gum tragacanth : a substance used in calico printing to prevent dyes from running. It is obtained from a small prickly shrub grown chiefly in the countries bordering the E. Mediterranean.

Hinderland : the area lying behind a port through which its imports and exports largely pass. Thus the Indus basin is the hinderland of Karachi, the Yang-tse basin is the hinderland of Shanghai.

Madder : a red or yellow dye obtained from the roots of a small plant which grows in the countries bordering the E. Mediterranean. It is more lasting than the aniline dyes which have largely supplanted it.

Pistachios : a kind of edible nut grown largely on the seaward slopes of the Pontus Mountains.

Rain shadow : an area lying in the lee of a mountain range which deprives it of much rainfall by bringing about precipitation on the windward slope. Examples : Deccan, E. Palestine.

Rias : see *drowned coasts*.

Rift valley : a long trough caused by the slipping down of the earth's crust between two parallel cracks or faults. (See *faults*.) Examples : Jordan Valley, Dead Sea, Red Sea, Rhine Valley.

Savannah : tropical grasslands, having rain only in the hot period and drought for the rest of the year. Thus trees are rare except along the water courses, the vegetation being chiefly long grasses and bulbous plants. The savannahs lie each side of the tropical forests. Examples : Sudan, Rhodesia, parts of Deccan.

Scrub : a semi-desert area bordering a hot desert. The plant life consists mainly of grass, low thorny bushes and dwarf trees. Examples : parts of the Deccan, N.W. Victoria.

Sorghum : Indian name for the Great Millet—a grain crop grown largely in India, and also in Africa, where it is known as Durrah.

Steppe : treeless, grassy areas having hot summers and a moderate rainfall. Examples : S.E. Russia, Asia Minor, S. Siberia.

EXAMINATION QUESTIONS.

[L.M. = London Matric., L.G.S. = London General School, J.M.B. = Joint Matric. Board, O.S.C. = Oxford School Certificate, C.S.C. = Cambridge School Certificate, Scot. Certif. = Scottish Certificate, C.W.B. = Central Welsh Board.]

LESSONS I.-VI.

1. Describe the regime of the River Euphrates, and show how it affects the work of the people in its basin. (L.M.)

2. Describe the surface features, climate, and resources of *either* Palestine *or* Mesopotamia, and explain the distribution of population in the country selected. (O.S.C.)

3. Draw a sketch map of *one* of the following : Asia Minor. Burma, Mesopotamia. Mark the chief physical features and towns, and describe the occupations of the people. (C.S.C.)

4. Give a general account of the relief and drainage, the distribution of rainfall, and the location and nature of the chief agricultural industries, in Western Asia. Illustrate your answer with a sketch-map. (L.M.)

5. Give a short account of the "land of the five seas," and say why you think it is important. [Note : the "five seas" are the Mediterranean, Black, Red, and Caspian Seas, and the Persian Gulf.] (L.G.S.)

LESSONS VII.-XVII.

1. Describe (*a*) the character and causes of monsoon climate in any *one* selected region, and (*b*) its influence on human life. (O.S.C.)

2. Give an account of the distribution of rainfall in India, discussing both its distribution throughout the year and its distribution over the country. Explain the reasons for the distribution you describe and discuss shortly the relation of the rainfall to crop production. (Scot. Certif.)

3. Write a brief account of the seasonal distribution of rainfall in each of the following districts : (a) Assam, (b) the lower Indus Valley, (c) Ceylon. (C.S.C.)

4. Describe the position and character of the Himalayas and discuss their effects on the climate of surrounding regions. (C.S.C.)

5. Draw a sketch map of the northern Plains of India, showing the main rivers. Describe, in outline, the climate and products, and the density of the population, pointing out and explaining the chief contrasts between the eastern and the western parts of the region. (Scot. Certif.)

6. Write a geographical account of *either* the Punjab *or* the Deccan, with special reference to surface features, climate, agricultural production, and distribution of population. (O.S.C.)

7. Explain why India possesses more cattle than any other country in the world, and discuss the place of cattle in the agricultural life of the country. (O.S.C.)

8. "India is essentially an agricultural country." "In many parts of Bengal the density of population reaches 1200 per square mile." Discuss and explain these two statements. (O. and C.S.C.)

9. Describe the physical features of peninsular India and show how they affect the nature and distribution of the rainfall and the products of its different areas. (C.S.C.)

10. Choose any *three* of the following ports, describe the exact position of each, and the extent, climate, and products of the area which it serves as outlet :—Bombay, Rangoon, Shanghai, Hankow, Yokohama, Manila. (O.S.C.)

11. Give an account of the trade between Great Britain and India, discussing both the commodities exchanged and the ports handling the trade. (L.M.)

12. Show how the physical features of the land have influenced the direction of the main railways of India. Your answer must be illustrated by a sketch-map. (C.S.C.)

13. Compare the conditions in which wheat is grown in India and in Canada. (O. and C.S.C.)

14. "India is not a country but a continent." Discuss this statement. (O. and C.S.C.)

15. In what parts of India is irrigation necessary? Give reasons for your answer and describe the agriculture in the chief irrigated areas. (L.G.S.)

16. Show the influence of (a) the relief of the land, (b) the productivity of the soil, (c) climate, upon the distribution of population in *either* India *or* China. (L.G.S.)

17. Describe carefully the chief approaches by land and sea to British India. (L.G.S.)

18. State carefully what you understand by the Monsoon Region of Asia. Choose four typical crops of the region, and show how they are suited to the physical and climatic conditions of the areas in which they are grown. (L.G.S.)

LESSONS XVIII.-XXII.

1. Island	Area in sq. miles	Population in Nov. 1920	Population per sq. mile in 1920
Java	50,745	34,984,171	689
Sumatra	163,138	5,852,123	36

State, as fully as you can, why it is that Java, although very much smaller than Sumatra, supports a much greater population, as is shown by the table above. Compare the chief occupations of the two islands. (C.S.C.)

2. Describe the purposes and the consequences of the work of the white man in *either* Malaya *or* the Amazon Basin. (C.W.B.)

3. Give an account of the production of rubber, both wild and cultivated; and indicate precisely where the most favourable conditions for its production are to be found. (O.S.C.)

4. In what respects do the main economic products of the Punjab differ from those of Java? Give what reasons you can for the differences. (C.S.C.)

LESSONS XXIII.-XXVI.

1. Discuss and explain the differences in climate between North and South China. Show how these differences are reflected in the life and occupations of the inhabitants. (C.S.C.)

2. Give an account of the mineral resources of China, under the following headings: (a) geographical distribution, (b) present stage of development. (C.S.C.)

3. What are the chief differences as regards surface features, climate, and resources between the Basin of the Hwangho and of the Si-kiang? (O.S.C.)

4. Show how the characteristic occupations of the people are related to geographical conditions in *either* (a) the Mississippi basin, *or* (b) the Yang-tse-Kiang basin. (J.M.B.)
5. Write an orderly geographical account of *either* China Proper *or* Egypt. (L.M.)
6. Account for the distribution of population in China. (O.S.C.)
7. What advantage does *either* India *or* China possess for the development of large manufacturing industries? In which parts of the country might such industries be established? (O.S.C.)
8. *Either*: Divide China into natural regions, indicating the main resources of each;
Or: Give a geographical account of the Indo-Gangetic plains, offering explanations of their great density of population. Illustrate by a sketch-map. (Scot. Certif.)
9. What are the chief geographical difficulties in organising modern transport in *either* (a) China Proper *or* (b) South Africa? To what extent have these difficulties been overcome? (C.S.C.)

LESSONS XXVII.-XXXI.

1. Show how the position, the relief, and climate of Japan influence the food supply and the industrial activities of its inhabitants. (O.S.C.)
2. Show how the Japanese have endeavoured to make use of the resources of their lands in (a) forests, (b) alluvial plains in a monsoon climate, (c) minerals. (C.W.B.)
3. Account for the fact that Japan is a manufacturing country. Give as full an account as you can of the manufacturing industries. (L.M.)
4. How far may the industrial prosperity of Japan be attributed to (a) natural resources, (b) world position? Say what you know about Japanese industries. (L.M.)
5. Mention *two* different types of industrial undertakings which are being developed in *either* India *or* Japan. What are the chief centres of each?
Discuss the difficulties of developing these industries. (C.S.C.)

LESSONS XXXII.-END.

1. Describe carefully the essential characteristics of a continental climate. Select any *one* of the northern Continents and indicate precisely where this type of climate occurs. For what type of natural vegetation is this climate suitable ?

(O.S.C.)

2. Describe carefully the position of *three* distinct desert areas in Asia ; account for their occurrence, and show how far they can be made use of for man's settlement.

(O.S.C.)

3. Describe the position and characteristics of two large deserts in Asia, *one* at a great elevation, *one* at a low elevation.

Explain why they are deserts and why, in certain parts, there is a small population.

(C.S.C.)

4. Name parts of the world which are permanently covered with snow. How do snowfields affect the rivers, industry, and agriculture of adjacent regions.

(O.S.C.)

5. Why are there great areas permanently covered with snow outside the Polar regions ? Where are they found ? Confining your illustrations to *one* continent, explain what effect such conditions have upon the life of man in lands adjoining.

(O.S.C.)

6. What geographical reasons help to explain the fact that the development of Canada has been much more rapid than that of Siberia ?

(Scot. Certif.)

7. Explain on geographical grounds the low density of population in *two* of the following countries :—Northern Siberia, Tibet, Arabia. In each of the countries chosen show how the life of the people is affected by their physical surroundings.

(O.S.C.)

8. Describe the position and extent of the great coniferous forest belt of Northern Asia. What are the chief economic products of these forests ?

(C.S.C.)

9. Write a connected account of the physical features, climate, and resources of Siberia, and give geographical reasons for the slow commercial development of the country.

(O.S.C.)

10. Describe a journey by the Trans-Siberian Railway from Moscow to the Pacific coast of Asia with special reference to (a) scenery, (b) important towns along the route.

(C.S.C.)

11. What changes would you notice in the natural vegetation during a journey from the Arctic coast of Siberia to the Sea of Aral? Account for these changes. (C.S.C.)

12. Explain how (a) the water-supply, (b) the character of the lower course of each of the following rivers, depends on the climate of its *basin* :

The Brahmaputra ; The Ob (West Siberia). (C.S.C.)

13. The chief rivers of Asia radiate from a central mountain and plateau area. Describe the arrangement of the relief in this central area, with special reference to the position of the headstreams of the rivers that rise in it. (M.)

TYPICAL QUESTION PAPERS.

LONDON MATRICULATION.

1. Select two areas in Asia which have rain mainly in summer but which have widely different types of vegetation. Describe the vegetation of the areas selected and contrast the modes of life of the inhabitants.

2. Point out some of the geographical consequences of the existence of the great highland barrier of Central Asia.

3. Describe any *two* of the following industries, noting specially the climatic and labour conditions :—(a) Rubber growing in Malaya, (b) Cotton growing in India, (c) Tea planting in Assam.

4. The population of S.E. Asia is grouped largely in river valleys. Describe the advantages that these valleys possess for human settlement. Select one of these valleys for detailed description.

5. Show the influence of *site* on the importance of :—Para, Cairo, Delhi, Shanghai.

LONDON GENERAL SCHOOL.

1. Locate and describe three different types of forests found in Asia, and use these examples to explain the various climatic factors determining forest growth.

2. Give an account of the mineral resources of British India, and compare them with those of China and Japan.

3. Whereabouts in India, and under what natural conditions, are any *three* of the following produced for export : cotton, rice, tea, jute, wheat? Name the port of export in each case.

4. There are at least three methods of irrigation practised in India. What are the three methods, and where are they practised? Indicate any striking effects.

5. In what parts of Asia is there (a) constant scarcity, (b) seasonal scarcity, of rainfall? Explain the facts you mention.

CAMBRIDGE SCHOOL CERTIFICATE.

1. Describe and account for the chief features of the seasonal distribution of rainfall over the continent of Asia.

2. Explain as fully as you can why it is that the majority of the inhabitants of Asia live south-east of a line from the mouth of the Indus to Korea.

3. Describe the geographical conditions which favour the production of the product mentioned in the following areas: Japan for silk, Malaya for rubber, Burma for rice, Siberia for furs.

4. Locate as exactly as possible the homelands of *two* of the following peoples, and show to what extent their life and occupations have been influenced by the geographical conditions of the land in which they live: Afghans, Kirghiz, Samoyeds, Tibetans.

5. Describe the position and importance of *three* of the following ports: Batavia, Calcutta, Hong-Kong, Karachi, Tientsin.

OXFORD SCHOOL CERTIFICATE.

1. Describe and account for the facts of a monsoon climate in *one* selected region of the world.

2. Compare any *two* of the following river systems as regards the source of their water-supply, their value for agriculture and for transport:—the Yenisei, Tigris, Hoangho, Ganges.

3. Write an account of the timber resources of *one* of the following areas, explaining the distribution and the types of forest, and giving some account of the methods of obtaining the timber:—British Columbia, India, Scandinavia, Siberia.

4. Why is the northern half of Asia so thinly and the southern half so thickly populated?

5. Describe carefully the position and account for the importance of *four* of the following:—Damascus, Vladivostok, Canton, Kabul, Singapore, Delhi.

JOINT MATRICULATION BOARD.

1. "India is a land of contrasts." Illustrate this statement by giving and explaining examples of contrasts in the case of *three* of the following : relief, rainfall, animals, cultivated products, peoples.

2. State in what parts of the world each of *three* of the following is used for transport and allied purposes : camel, elephant, llama, reindeer, yak.

Describe, in each case, (a) how the animal is adapted to the geographical conditions, and (b) the kind of work which it performs.

3. On a sketch-map of India mark the positions of the Ganges basin, the Dekkan, and the Thar. Contrast the density of population of the three areas and account for the differences.

4. Show how the Japanese have endeavoured to make use of the resources of their lands in (a) forests, (b) alluvial plains in a monsoon climate, (c) minerals.

5. "The population of China is concentrated largely in three great river basins." Name and locate these three river basins and in the case of *one* of them describe (a) its relief and climate, (b) the agricultural activities of the inhabitants.

MISCELLANEOUS QUESTIONS.

1. Describe the distribution of rainfall in India, and show how it affects the production of food crops. (O.S.C.)

2. Explain what is meant by the Monsoon Lands of Asia, and give a short account of the climate of *one* of the countries included, indicating how it affects the life of the people. (Scot. Certif.)

3. Describe (a) the cause and (b) the effect of the seasonal modifications of the tropical high pressure belt in the Northern Hemisphere, and illustrate your answer on a sketch-map or diagram. (O. and C.S.C.)

4. Describe the main characteristics and account for the distribution of forests in *either* Asia, *or* Europe. (O.S.C.)

5. Give an account of the distribution of forests in one of the northern continents. What determines their limits ? (O.S.C.)

6. Describe and give reasons for the differences between an equatorial and a monsoon forest. (O.S.C.)

7. Write a geographical description of *one* important river basin in the Northern Hemisphere, dealing with the physical features, climate, distribution of settlements, and occupations of the people. (O.S.C.)

8. Compare the course of the Indus, from source to mouth, with that of the Yang-tse-kiang. Show to what extent these rivers are useful as routes to the interior. (C.S.C.)

9. Write a description of *two* of the following land-routes so as to bring out the difficulties of each :

- (a) Peshawar to Kabul, (b) Lahore to Leh,
(c) Mandalay to Calcutta, (d) Singapore to Bangkok.
(C.S.C.)

10. Describe, in relation to the physical features, the route taken by the railway between *one* of the following pairs of towns : (a) Smyrna and Aleppo, (b) Omsk and Port Arthur, (c) Bombay and Calcutta. Your answer must be illustrated by a sketch-map. (C.S.C.)

11. Show the influence of (a) the relief of the land, (b) climate, (c) the productivity of the soil, upon the general distribution of the population of *either* Asia, south-east of a line drawn from the mouth of the Indus to Korea, *or* South America, south of the Tropic of Capricorn. (C.S.C.)

12. Some of the most important mines in the world occur in areas which are scantily peopled. Give *three* examples of such mines and describe their geographical circumstances. (C.W.B.)

13. A cargo steamer on her return journey from Japan loads up with Japanese goods for Britain, and calls at Shanghai, Singapore, Rangoon, Calcutta, Colombo and Karachi, for further cargo for Europe.

(a) Draw a sketch map to show the journey and the positions of the ports of call.

(b) Name the two most likely exports that she will load at each place she leaves.

(O. and C.S.C.)

14. Account for the much greater density of population in South-Eastern Asia than in South-Western Asia. (L.M.)

15. In the case of *either* South America *or* China state and explain the geographical factors that have led to the growth of relatively dense populations in certain parts. Indicate the regions you refer to on a sketch-map. (L.M.)

16. Compare, and contrast, from as many points of view as possible, the Ganges basin with *either* Mesopotamia *or* the Ob basin. (L.M.)

17. Compare the summer conditions of life and occupations of the inhabitants in (a) Western Siberia, (b) Palestine, (c) Ceylon. (C.S.C.)

18. Describe the influence of climate and physical features on the mode of life and activities of a farmer (a) in the Punjab, (b) in West Siberia, (c) in Lower Burma. (C.S.C.)

19. Select a mountain region and discuss the influence of environment upon the economic and social life of its inhabitants.

Or Compare the advantages and disadvantages of mountains and rivers as political frontiers : give examples.

(O. and C.S.C.)

20. State the chief occupations of the inhabitants of *two* of the following areas and show to what extent they are determined by geographical factors : Bengal, Ceylon, Iraq, the Philippines. (C.S.C.)

21. Write brief descriptive notes on *two* of the following : the loess soil formation of China ; the Ganges-Brahmaputra delta ; the vegetation zones of the southern slopes of the Himalayas. (C.S.C.)

22. Give a concise geographical description, illustrated by a sketch-map, of *one* of the following :—Burma, Iraq, Egypt, the Yangtse valley, the Deccan, the South Island of New Zealand. (Scot. Certif.)

23. Discuss the chief difficulties which hinder the economic development of *either* Burma *or* Iraq. To what extent are these difficulties being met ? (C.S.C.)

24. Compare the physical features, climate, and natural products of *either* the Malay Peninsula and Siam *or* the Native States of Mysore and Rajputana. (C.S.C.)

25. Write an account of the agricultural geography of *one* of the following : the Deccan, the Philippine Islands, Ceylon, the Malay Peninsula. (C.S.C.)

26. *Either* Describe the physical features, climate and industries of Japan ;

Or Draw a sketch-map to show the relief, grass-lands, and desert lands of Africa, south of the Zambesi. Explain how these features, together with the presence of minerals, have largely determined the direction of the principal railways in South Africa. (C.S.C.)

27. Indicate, preferably by sketch-maps, the direction or directions of the winds which blow most frequently over *three* of the following areas : (a) Tasmania, (b) West Indies, (c) mainland of Japan (Honshiu), (d) Ceylon. In *two* cases describe the effect of the winds upon the temperature and rainfall conditions of the area considered. (J.M.B.)

28. What causes may lead to the rise of a great town in the interior of a continent? Illustrate by accounts of any *four* of the following:—Pittsburg, Khartum, Delhi, Hankow, Damascus, Winnipeg. (Scot. Certif.)

29. Give examples from Asia of towns which have grown up (a) on ocean highways, (b) at the confluence of rivers, (c) where great land routes meet, (d) in a valley leading to a pass.

Illustrate the position of *one* example of each type by means of a sketch-map, and explain the value to it of its communications. (C.S.C.)

30. Select from any *one* Continent *four* of its most important ports, each serving a distinct area; account for the position of each of the *four* ports, and state the chief features of its trade. (O.S.C.)

31. *Either* Discuss the geographical advantages of site possessed by Delhi and Peking which have helped to make these cities the capitals of India and China respectively;

Or Name *three* important Japanese ports and describe their positions as accurately as possible. Account for the leading feature of the trade of each port. (C.S.C.)

32. What are the chief conditions which determine the position and growth of large modern seaports? Illustrate your answer by reference to Asiatic examples. (C.S.C.)

33. Describe the position and account for the importance of *three* of the following towns: Allahabad, Batavia, Colombo, Penang, Rangoon, Yokohama. (C.S.C.)

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